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ABSTRACT

This practicum report describes the development and implementation of an SDI (Selective Dissemination of Information) system for administrators. The purpose of the SDI system was to provide current and economical retrieval and dissemination of the published educational literature in order to encourage educational improvements. Practicum procedures are presented, followed by an examination of evaluative data related to each of six objectives. The report describes the implementation during the one-year period, and presents the results of information utilization in the school districts. The practicum affirmed that supplying relevant information to persons needing it can be accomplished effectively by using the computer terminal. The SDI system succeeded both in bringing knowledge of the ERIC data base to the attention of the administrators, and in making available significant literature in the field of education; the results of user evaluations indicated positive reactions to the service. Pertinent conclusions from related research investigations that were used in developing the practicum strategy are reported, and forms and instruments are appended, as well as a glossary of terms and a bibliography of related reports. (Author/JEG)

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Developing and Implementing A Computerized SDI Service for Educational Administrators

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Submitted in partial fulfillment of the requirements of the National Ed.D. Program for Educational Leaders, Nova University.

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Introductory Practicum
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ABSTRACT

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DESCRIPTORS Administrative Personnel; Information Dissemination; Information Centers; Information Utilization; Information Needs; Information Services; SDI*; Selective Dissemination of Information*

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This practicum report describes the development and implementation of an SDI (Selective Dissemination of Information) system for administrators. The purpose of the SDI system was to provide current and economical retrieval and dissemination of the published educational literature in order to encourage educational improvements.

Practicum procedures are presented in this report followed by the examination of evaluative data related to each of six objectives. This practicum report describes the implementation during the one-year practicum period and presents the results of information utilization in the school districts. The operational features of the SDI system consisted of: profile development, notification of abstracts and delivery of ERIC (Educational Resource Information Center) documents for administrative use in planning and decision making.

The practicum affirmed that supplying relevant information to persons needing it can be accomplished effectively by using the computer terminal. The SDI system has succeeded in two important missions: (1) bringing the ERIC knowledge base to the attention of the administrators; and (2) making available the significant literature in the field of education. The majority of the participants reported that the SDI system was responsible for local program applications. The results of user evaluations indicated positive reactions to the service. This practicum supported the belief that information could be applied by administrators and that information-seeking behavior can increase if the school districts are served by a linking agency that disseminates quantities of information.

Pertinent conclusions from related research investigations are reported that were used in developing the practicum strategy. Forms and instruments are provided in the Appendices along with a glossary of terms and a bibliography of related reports.

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*Denotes an identifier

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CHAPTER I
PROBLEM STATEMENT

Introduction

This practicum report describes the development, implementation and evaluation of an experimental SDI (selective dissemination of information) service based on the Educational Resource Information Center (ERIC) data base. This practicum examined the impact of an SDI service targeted to school administrators. Practicum participants were educational administrators in the school districts served by the Merrimack Education Center in Chelmsford, Massachusetts. A major purpose for this practicum was to translate ERIC research and resource documents into educational practice in the public school settings.

To effect the link between the information resources of the Merrimack Education Center and the local schools, an SDI service was implemented that acquainted target personnel with resources and provided information to the administrators for initiating and developing programs. It was projected that such an SDI system would increase the participation of administrators in acquiring and using the information resources. Information-use practices of the administrators were examined and an effort was made to determine the extent to which information services were used.

The practicum assessed the effect and impact of selected aspects of the information service on administrative decision making. This practicum report presents the details of the development and performance of the SDI system during its initial year.

Three primary sources of information concerning user needs were utilized in preparing the design for this practicum; first, discussions were held with members of the Merrimack Education Center's Executive Board of Superintendents and with members of the Massachusetts Department of Education user board of administrators who review dissemination problems with the State. Second, data on the work-related issues of administrators were examined through a literature review reported in Chapter III of this practicum report. Finally, a preliminary survey was mailed to selected educational administrators and interview data were collected from twenty-four project directors of Title IV-C projects. This section of the practicum report describes results of the data collection to further provide indicators of the problem.

Questionnaire Design

A survey questionnaire was designed and tested with approximately a dozen individuals to provide a check on the time it would take to complete the mailed questionnaire. The field test identified some questions that were not clear to the respondents and the questionnaire was revised. The final form of the questionnaire (cf. Appendix A) was based upon the literature review and the trial test.

The questions examined administrators' current reading activities and attitudes toward the educational literature prior to the initiation of the practicum. The questionnaire contained a combination of multiple choice and one or two short-answer questions. The data analysis provided a basis for describing the behavior of school administrators when utilizing information resources.

The specific items for the questionnaire design were based upon questionnaires prepared by Drott[1], Goetz[2], Klingenberg[3], Leggate and others[4], Ross[5], and the Information Market Study performed by Hood and others.[6] The resulting questionnaire was a composite of the instruments utilized by these authors. An interview schedule was designed by Ronald Havelock as consultant to the Merrimack Education Center's evaluation of Title IV-C projects in Massachusetts for 1977. This instrument was tested by the MEC evaluation team and revised based upon practice trials (cf. Appendix B). Portions of this evaluation instrument are summarized

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[1]Milton Drott, "Models and Measurements of User Information Needs in the Selection of Systems for the Selective Dissemination of Information" (Ph.D. dissertation, University of Michigan, 1973), p. 184.

[2]Francis Goetz, "Innovation and the Public Elementary School Principal" (Ed.D. dissertation, Wayne State University, 1965), p. 153.

[3]Allen Klingenberg, "A Study of Selected Administrative Behaviors Among Administrators from Innovative and Non-Innovative Public School Districts" (Ph.D. dissertation, Michigan State University, 1966), p. 42.

[4]P. Leggate, et al., The BA Previews Project: The Development and Evaluation of A Mechanised SDI Service for Biologists (London, England: Office for Scientific and Technical Information, ED 095 865, August, 1973), p. 229.

[5]Paul Ross, "The Establishment of an Educational Information Program and an Assessment of Its Utilization in Local School Districts" (Ed.D. dissertation, University of Massachusetts, 1975), p. 118.

[6]Paul Hood, Colin Mick, and Robert Katter, The Educational Information Market Study, Vol. II: Summary Report (Berkeley, California: Far West Laboratory for Educational Research and Development, ED 135 411, 1976), p. 1-7.

here to illustrate the utilization of information as part of the problem solving process in these Title IV-C innovative projects.[7]

The Sample

Three major audiences of educational administration were identified for this practicum:

1. elementary and secondary public education administrators who worked in the fifty communities that already subscribed to the MEC information services
2. project directors of Title IV-C projects that MEC staff were evaluating (non-subscribers)
3. administrators of State Department of Education projects. Title I, Regional Education Centers, and collaborative directors were grouped in this category.

Approximately seventy questionnaires were mailed, with an accompanying cover letter and an inventory checklist of educational topics. (Cf. Appendix C) Questionnaires were mailed between February 1, 1977 and February 15th. The largest percentage of responses came from the subscribing administrators because they were familiar with the ERIC system and had maintained on-going communications with MEC over a period of ten years. Table 1 illustrates the number of responses received from each of

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[7]Merrimack Education Center, Making Innovation Work, Report to the Massachusetts Department of Education, Bureau of Curriculum and Instruction, Title IV-C, August, 1977 (Chelmsford, Massachusetts: Merrimack Education Center, 1977), p. 32.

the three major categories and the respective percentage that the number represents.

TABLE 1

RESPONSES RECEIVED

Category	Responses	Percentage
Elementary and Secondary Administrators (previous MEC subscribers)	29	65%*
Title IV-C project directors	8	17%
State Department of Education Administrators	9	18%
Total	46	

*approximate

A stamped, addressed envelope was included with the mailing of the questionnaire accompanied by a one-page form on which the administrator recorded current interest topics that would become the basis for his or her individual profile for selective dissemination.

The individuals surveyed for this practicum represented a large region of the State to ensure a representative cross section of administrators from the educational community. All school districts in the Merrimack Valley were given the opportunity to participate as well as any subscribing communities from outside the Merrimack Valley. Title IV-C project directors and Title I project directors from surrounding communities were contacted as well as State agency personnel and directors of collaboratives serving low-incidence handicapped populations.

Since a selected sample was used, results of this practicum are not totally generalizable to other populations. The criteria established by Katagiri[8] in the Oregon knowledge utilization study were applied in making decisions about the selected sample of participants for this practicum. Katagiri recommended four criteria in the Oregon study that were utilized in this practicum:

1. Degree of understanding of the user's information requirements by the retrieval staff
2. Utilization of the dissemination center prior to initiation of the SDI service
3. Amount of information already available on the user's information acquisition habits
4. Rapport between the user and the retrieval personnel

The sample for this practicum was therefore different from other nation-wide samples since MEC staff had had ten years of exposure working with some of the participants who were previous subscribers and a minimum of two years working with other respondents.[9] The sample consisted of administrators already familiar with ERIC and computerized retrieval; this would tend to bias the results.

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[8] George Katagiri, "Oregon's Pilot State Dissemination Program. Final Report" (Salem, Oregon: Oregon State Department of Education, July, 1973), p. 14.

[9] A study by the Center for Research Utilization of Scientific Knowledge, of novice individuals regarding computerized information services, revealed that "computerized systems for knowledge retrieval were mentioned so infrequently that they were of no statistical significance" and, therefore, not included in the data presentation. For this reason, it appeared to be most effective to have the participants at least familiar with manual searching of the ERIC files. See Nathan Caplan et al., The Use of Social Science Knowledge in Policy Decisions at the National Level (Ann Arbor, Michigan: Center for Research on Utilization of Scientific Knowledge, the University of Michigan, 1975), p. 13.

The results of the data analyzed and presented in the following pages represent responses from thirty-five persons. Three questionnaire packages were incomplete and were discarded. Several administrators delegated the questionnaire to a coordinator who did not fit the practicum requirement of an administrative role; these questionnaires were also discarded. Three administrators have since left their respective positions. The overall response rate of approximately seventy percent is not unreasonable for mailed surveys. Paisley and Paisley[10] reported a response rate of approximately twenty-nine percent.

Implications from the Survey

Useful information relative to information-gathering habits of educational administrators was obtained from the survey questionnaire. Several responses to the questionnaire highlighted the need for an intensive dissemination service for these practicing administrators. The data resulting from the survey instruments were analyzed using the total sample of administrators and, on occasion, further analysis was performed to seek differences in administrative responses between those who were previous subscribers and those who were not previous subscribers (non-subscribers.)

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[10] William Paisley and Matilda Paisley, Communication for Change in Education: Educational Linkage Programs in the 1970's (Berkeley, California: Stanford University, 1975, ERIC ED 115 221), p. IV-8. The authors obtained "a return rate of only 29% from a total mailing of 4421 questionnaires." In this practicum, a larger return rate was expected since the Merrimack Education Center had worked with many of the administrators over a period of ten years.

Purposes for Needing Information

The questionnaire included a listing of fifteen purposes for seeking information. There were many reasons educators named for seeking information in informal dialogue. Some administrators were concerned with the need to keep aware of developments in the field. Other administrators were more concerned with addressing immediate problems. Table 2 presents the fifteen items from question number six on the preliminary practicum survey: "For what purposes do you primarily seek information in your work?" The fifteen items are presented in rank order from most frequent purpose to least frequent purpose.

TABLE 2

RESPONSES IN RANK ORDER

Purposes for Needing Information	Rank Order
Curriculum Development	1
Better Understanding of the Issues	2
Identifying Alternative Approaches to Solving Problems	3
Personal/Professional Development	4
Administration or Policy Making	5
Identifying New Sources for Improving One's Work	6
Program Development	7
Staff Planning/ Development	8
Program Evaluation	9
Evaluating Educational Practices or Products	10
Proposal Development	11
Staff Evaluation	12
Preparing Reports, Articles, or Speeches	13
Program Planning and Budgeting	14
College or Graduate School Course Work	15

It was postulated that another very important purpose for the administrator's need of information was to provide informational resources to others. Since this was viewed as extremely important, a separate question was provided in the questionnaire to collect data on role perspective. This purpose is discussed in the following pages as the "gatekeeper" role because the literature had defined administrators as "gatekeepers" or "linking pins."

The Administrator as Gatekeeper

Because of his major role in communicating information to others in the school district, the respondent was asked to indicate on question number eighteen: "How often do educators come to you for information resources, or do you pass informational resources on to others?" Only three persons responded "seldom" with all the remaining administrators indicating "often," "frequently," or "very frequently." The mean for all thirty-five responding administrators was 3.74 on a five-point scale (five representing high.) A major responsibility of the administrator is communicating information to others--his subordinates, peers, or superiors. Administrators have the largest impact on decisions of subordinates to adopt new practices. Table 3 reveals this major responsibility of the participating administrators.

Interviews with the Title IV-C project directors also revealed this pattern of interaction with colleagues and peers in the school district, as well as superiors and subordinates. Most frequently described by the project director were internal linkages with the curriculum supervisor, the project director, or other central office personnel serving

TABLE 3

ADMINISTRATOR PROVIDES INFORMATION FOR OTHERS

Scale: 5 = High 1 = Low

		Percent of Total
5	Very Frequently	24%
4	Frequently	35%
3	Often	32%
2	Seldom	9%
1	Rarely	0

as "linking pin" through interpersonal communication networks to some outside resources. Both formal and informal relationships were maintained through social interaction, sharing and the exchange of information. In the final report of the Title IV-C interview and evaluation process, it was concluded:

> The most constant elements in this configuration were the relationship between the project and the superintendent and the inter-connected relationship of the superintendent to his school committee. [11]

The administrator who is well informed on the current literature can bring new practices to the attention of his colleagues and subordinates since this is a primary requirement of his or her job. If a thorough information review were conducted, this would complement the typical "seat of the pants" management style of most administrators. If the administrator is kept current as new trends and issues emerge, this

[11] Merrimack Education Center, p. 11-12.

should increase thoughtful, insightful decision making as opposed to crisis-oriented, reactive decision making.

Although the participants in this practicum survey responded to question number eighteen that a major responsibility is to communicate information to others, the implications of the Information Market Study[12] are that this information is among the most difficult to obtain. The Information Market Study further stated that "finding answers to specific questions related to work was, on the average, the most frequent purpose" for seeking out information.[13] Responses to several other questions on the practicum survey shed light on these problems.

On question number ten of the practicum preliminary survey, respondents were asked to indicate the degree of difficulty they had in obtaining and reading current literature. Table 4 illustrates the responses to question number ten, in rank order, from most difficult to least difficult.

Despite the fact that administrators reported experiencing difficulty locating and obtaining relevant materials, the respondents on the practicum survey indicated on question number nine that they believed they were moderately satisfied in respect to ability to stay well-informed on new work in the field of education. The mean rating on question number nine was 3.1 on a scale from one (low) to five (high).

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[12] Paul Hood, Colin Mick, and Robert Katter, The Educational Information Market Study, Vol. II: Summary Report, p. VIII-3.

[13] Ibid., p. VIII-6.

TABLE 4

RESPONSES IN RANK ORDER

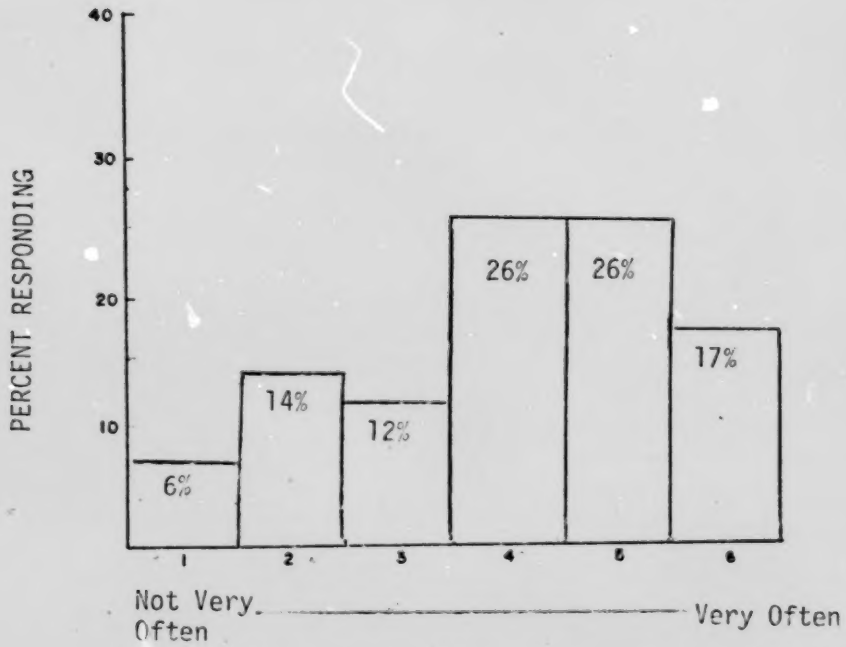
Difficulty	Rank Order
Finding time to read and assimilate the materials when obtained	1
Getting the most current background information	2
Finding out which specific, newly published items (periodical articles, etc.) are relevant to your interests	3
Obtaining materials	4
Determining how receptive the school system is to program or results of studies performed elsewhere	5

These administrators are probably using the telephone communications and interpersonal contact with other key administrators to stay well informed.

Administrators reported on question number eleven that they often (fifty percent) or frequently (thirty-five percent) attempt to discover what information has been published on a subject when faced with a new problem in the course of implementing a project or program. However, when asked on question number twenty-three how often they review the literature when confronted with a key decision respondents indicated that they do this about fifty percent of the time. The mean for this question, on a six-point scale (one = low; six = high), was 4.03. Figure 1 illustrates the responses to question twenty-three in a bar graph.

FIGURE 1

How often do you review the literature when making key educational decisions?



On the whole, the administrators were convinced of the value of keeping up with the literature and new developments. When asked on question number eight: "How important do you consider it to keep abreast of new work published in education?," thirty administrators responded it was essential to them (eighty-six percent.) All other respondents indicated that it was valuable with no one responding that it was of minor importance. Thirty-two respondents (ninety-one percent) indicated that articles they considered valuable appeared in periodicals that they did not regularly peruse and ninety percent believed that there would be a moderate or large quantity of such articles that they would ordinarily miss by their typical reading habits (as reported on question number thirteen.)

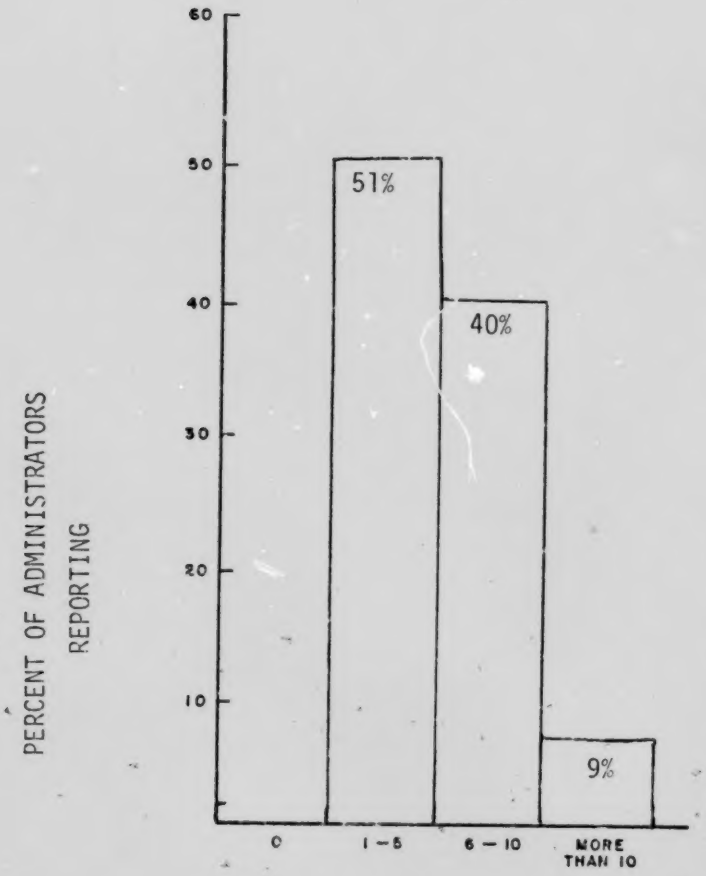
Access to Journals

On question number sixteen, administrators were asked to indicate approximately how many journals they read in the typical month. Those who reported reading six to ten journals each month constituted forty percent as shown in Figure 2. Those reading one to five journals each month constituted fifty-one percent. Only nine percent (three persons) reported that they read more than ten journals per month. This appeared to be a relatively small number of journals read since Current Index to Journals in Education indexes approximately seven hundred journals.

The journals reported by the administrators as read appeared to be obtained through subscriptions that are provided with membership in professional associations such as Educational Leadership. Table 5 lists the journals most thoroughly read by the administrators. The participants reported reading Phi Delta Kappan to a greater degree than any other journal. The number reported in the N column of Table 5 was obtained by summing the number of response questionnaires that tallied either the thoroughly read or the "read relevant articles" responses. Percentages were based on thirty-five returns.

Table 6 lists those that were least frequently read or unavailable to the administrators. The number of journals reported in the N column of Table 6 as least frequently read was obtained by summing the number of responses marked on the questionnaire as either unavailable or scanned but unread. Percentages were based on thirty-five returns. Table 6 shows many listings of journals that only one or two people marked; e.g., Peabody Journal of Education and Teachers College Record

FIGURE 2
NUMBER OF JOURNALS READ
IN TYPICAL MONTH



NUMBER OF JOURNALS READ
QUESTION 16

TABLE 5

PERIODICALS MOST THOROUGHLY READ

Journal	Number	Percent of Total
Phi Delta Kappan	30	86%
Educational Leadership	24	67%
NASSP Bulletin	18	51%
Harvard Educational Rev.	17	49%
American School Board Journal	16	46%
American Educational Research Journal	16	46%
Educational Review	15	43%
Saturday Review	14	40%
Elementary School Jrnl.	14	40%
Review Education Research	12	34%
National Elementary Principal	11	31%
Kappa Delta Pi Record	11	31%

as well as those journals that the respondents indicated were not available such as California Journal of Teacher Education and Ohio's Theory Into Practice. With rising costs of publications and the economic crunch hitting the school districts, this lack of utilization of journals might be expected to increase. Schools are not maintaining their professional collections of journals or other informational reports.

TABLE 6

PERIODICALS LEAST FREQUENTLY READ

Journal	N	Percent of Total
California Journal	14	40%
Teachers College Record	14	40%
Peabody Journal	13	37%
Administrator's Notebook	11	31%
Theory Into Practice	11	31%
IAR Research	11	31%
EPIE Publications	10	29%
Journal of Teacher Education	10	29%

Time Devoted to Reading Current Items

Respondents were asked on question nineteen to indicate the percent of their reading time devoted to reading current materials related to their work. The average person responding reported that between twenty and forty percent of his/her reading time was devoted to current materials that help the administrator keep abreast of the issues in the field of education. Thirty-seven percent reported in this category. Ten persons (twenty-nine percent) reported that forty to sixty percent of their reading time was devoted to this purpose and another twenty-three percent selected sixty to eighty percent. Table 7 depicts the responses of the thirty-five administrators to this question.

TABLE 7

PERCENT OF READING TIME DEVOTED TO CURRENT ITEMS RELATED TO WORK

Percent of Reading Time	Percent of Respondents Reporting in Category
0 - 20	9%
20 - 40	37%
40 - 60	29%
60 - 80	23%
over 80	3%

Paisley has conjectured that if "one hour per week during the school year were to be devoted exclusively to 'new developments in the field of education' . . . administrators would be far more cognizant of important trends than they are now."[14] If we could obtain that one hour that Paisley says is needed, by diverting time from the costly search and retrieval process of gathering information, the practice improvement efforts in schools could be enhanced. Thus, according to Paisley, the "archival side of ERIC would be adapted to his [administrator's] needs as a relayer and interpreter of trends."[15]

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[14]William Paisley, "Improving A Field-Based 'ERIC-like' Information System," Journal of the American Society for Information Science (November-December, 1971): 404 (ERIC EJ 049 246.)

[15]Ibid., p. 404.

Given the opportunity to conjecture how much time the reader would spend if notified of twice the number of current documents, thirty-three persons (94%) indicated that they could devote more time to reading than in the typical month. This appeared to be a good indication that, should the computer be able to save them searching time and notify administrators of relevant materials, the participants would be able to devote more time to reading the current literature. This question correlated with the responses on question number ten that "finding time to read and assimilate the materials" was of great difficulty and locating "the most current background information" was also difficult for the administrators. (Cf. Table 4, page twelve.)

No one indicated that s/he would read fewer articles than the previous "typical" month whereas twenty-nine persons conjectured that they would read "more than last month." Seven persons (twenty percent) marked the response "about the same number as last month;" this could be interpreted to mean that their schedules are so packed that they could not find the time to read the items or that they do not have the predilection for obtaining information through the print medium and prefer to rely on informal, oral communication channels.

Sources Preferred by Users

Information sources include informal, face-to-face discussions among friends and colleagues, as well as formal information services available through State Education Agencies, information centers, and the five national dissemination systems.[16] Participants in the practicum survey were asked to indicate how frequently they used seventeen information sources, both internal and external to the school system, that the Havelocks described as "most relevant to innovation processes."[17] Table 8 depicts the overall responses to this question, number twenty-two.

Frequency of use of the seventeen sources of information was determined by this question since respondents were asked to indicate how frequently these were used on a five-point scale. The points were then weighted arbitrarily as follows: (0) source not available; (1) infrequently; (2) occasionally; (3) with moderate frequency; and (4) very frequently. The range of responses varied, using a mean based on the weightings, from 1.36 (hardly used) to 3.4 (moderate to high frequency use) as represented in Table 8. Sources most frequently used (in descending order) included: (a) colleagues in same district; (b) inservice training; (c) subordinates in same district; (d) curriculum supervisors; (e) library facilities or media centers; (f) ESEA Title I funding for compensatory education; (g) ESEA Title IV funding for

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[16]Richard Spivey, et al., Interstate Project on Dissemination: Report and Recommendations, The IPOD Report to the National Institute of Education, Washington, D.C., January, 1976 (Washington, D.C., 1976), p. 32. The IPOD Report discusses five national dissemination systems including ERIC.

[17]Mary Havelock and Ronald Havelock, Educational Innovation in the United States, Vol. I: The National Survey (Ann Arbor, Michigan: University of Michigan, 1973), p. 118.

TABLE 8

SOURCES OF INFORMATIONAL RESOURCES
USED IN MANAGING THE SCHOOLS

	(0) Not Available	(1) Infre-quent	(2) Occasion-ally	(3) Moderate Frequency	(4) Very Frequently
Colleagues in Same District				3.4	
Subordinates in Same District				3.0	
Inservice Training				3.0	
Curriculum Supervisors				3.0	
Media Centers			2.8		
Library Facilities			2.7		
Title I			2.677		
ESEA Title IV			2.68		
ERIC			2.66		
Colleagues Neighboring District			2.5		
Regional Education Center			2.26		
SEA			2.46		
R&D Staff/Office			2.2		
Consultants			2.03		
Universities/Colleges		1.69			
Labs & Centers		1.36			
Foundations		1.148			

innovative practices or consolidated media, guidance materials and the like; (h) ERIC; and (i) colleagues in neighboring districts.

Least frequently used sources (in ascending order) included: (a) private foundations; (b) NIE/USOE Labs and Centers; (c) universities and colleges; (d) consultants; (e) research and evaluation staff; and (f) State Education Agency.

All of the first four information sources in frequency of use involve direct person-to-person contact. Library and media centers locally were the most frequently mentioned when grouped together as sources of print/media items. Thus the findings appear to confirm those reported by the Havelocks [18] that administrators prefer the sources closest to home and rely heavily on person-to-person contacts.

The fact that the majority of school districts receive Title I entitlements would appear to indicate that they see the Title I staff as resources that are internal and close to home in addition to the funds that are received for compensatory education in their local budgets. The Regional Education Centers and educational service centers are seen as useful resources and again are in proximity to the schools. ERIC is brought closer to the districts by the State capacity building project and by the educational service centers and some collaboratives (e.g., Project SPOKE, EDCO [19], etc.) The fact that consultants and universities are seen as less useful by the districts is somewhat surprising given the vast number of colleges in the Boston and Greater Boston region.

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[18] Ibid., p. 121.

[19] EDCO--Educational Collaborative of Greater Boston

It is not surprising that Labs and Centers are infrequently used since New England has no federally funded laboratory. The closest R&D Center (USOE/NIE) is in Pennsylvania--Research for Better Schools. The school administrators least frequently used the foundations perhaps because they have no access to information about these sources of outside funding.

In general, the emphasis was upon sources close to home. With imminent budget cuts, local media centers and libraries are apt to be the first to go in a district since school boards often see these as "frills." The largest city in the Merrimack Valley cut out the media center from the budget prepared for fiscal year 1978. This expressed need of the administrators to rely heavily on their media and reference centers, and the cutbacks in funding that these departments are expected to absorb, can be seen as justification for providing a regional education service from the Merrimack Education Center. As a regional service center, MEC could obtain subscriptions to the journal and report accessibility service that would increase the quantity of available literature and help to alleviate the problem of funding cutbacks in local school district budgets for library and reference services. Purchase of these items on an aggregate basis for a region was viewed as more cost-effective rather than the administrator having to subscribe to all the journals on a personal, local basis.

The mean information sources depended upon by all administrators in the sample was seven sources. This value was obtained by summing for each administrator in the sample the number of items out of seventeen indicated as very frequently used and moderately frequently

used. The responses to the questionnaire indicated that the administrative use of the information sources investigated ranged from three to fourteen information sources.

User Preferred Products and Services

Administrators indicated a preference on question number fifteen for regularly mailed information services over three other choices. When asked: "Which of the following information services would be most useful to you?" the overwhelming response was "regularly mailed information of interest" followed by a quick reference service at low cost and very rapid literature searches. Table 9 illustrates the rank ordering of these four items.

TABLE 9

RANK ORDER OF SERVICE OPTIONS

Rank	Service Options
1	Regularly mailed information of interest
2	Quick reference service at low cost
3	Very rapid literature searches
4	Rapid, full-document delivery

This was consistent with the Information Market Study's report that the most useful type of service listed by the national audience was "regularly mailed information of interest."[20] The administrators, who will probably continue to have quite limited funds for identifying

[20] Hood, Mick, and Katter, p. 376.

resources, could become more aware of possible choices in the R&D system and spend more of their limited discretionary time and money on locating useful and relevant materials when an SDI service is fully institutionalized.

Interviews with Title IV-C Project Directors

The MEC staff members who served on the evaluation team visiting twenty-four Title IV-C project directors collected data during the period of February 1 to March 31, 1977. The interviews were carried out on-site on a face-to-face basis. The average time required for each interview was about one and a half to two hours; the interviews contained a range of open-ended questions pertaining to the problem solving process for educational innovation.[21]

The underutilization of informational resources in Title IV-C projects was noted in the final report of the evaluation team. Project directors often cited the fact that they are too overextended and tied to a tight project timeline that allows little time to expend efforts in the direction of resource retrieval. The evaluation report stated that "there is no deliberate use of ERIC and minimal use of literature resources.... Resource search is thus seen almost entirely as a

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[21]A copy of the interview instrument is located in Appendix B. A full presentation of the evaluation and data gained from this instrument can be found in: Merrimack Education Center, Making Innovation Work, Report to the Massachusetts Department of Education, Bureau of Curriculum and Instruction, Title IV-C, August, 1977 (Chelmsford, Massachusetts: Merrimack Education Center.)

local matter."[22] Due to the lack of information and researching of the issues, promising new curricula may never be adopted or, if proposed, are often rejected; programs have been overthrown and plans for school programs have been refuted because the administrator "did not do his homework" in preparation for a briefing or presentation. The evaluation report further stated:

> Although many of these projects are resource linking by their very nature, they had little to say in interviews either about the kinds and amounts of informational resources they had retrieved and made available, or about their strategies for searching and acquiring them. [23]

Thus, the problem solving process breaks down along the way. [24] Many more such problems in school districts can be cited. People are unaware of available alternatives or unable to distinguish between political influences and authentic improvements. The most current description of this process has been noted when a school is closed due to declining enrollments and the other alternatives to closing the school are not studied. The political process of influencing decision-making takes over where the administrator lacks the appropriate skills to collect

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[22] Merrimack Education Center, Making Innovation Work, p. 18.

[23] Ibid., p. 32.

[24] Carl Rittenhouse and Maury Chorness, "A Survey of the Decision Processes and Related Informational Requirements for Educational Planning and Information," Paper presented at Western Psychological Association Convention, Vancouver, British Columbia, June, 1969, p. 8. Through application of the critical incidents approach, Rittenhouse and Chorness described 165 educational projects in which "there were evidences of planning breakdown attributable to the lack of information or its inadequacy;" and most of these were in curriculum planning.

information for a rational conclusion. To quote several administrators:

> Our ESEA Title III program suffered from the lack of information on group guidance techniques for adolescents.
>
> Lack of relevant data in a manageable form is a problem that affects all our educational planning.
>
> Lack of the appropriate knowledge in trying to move into a formal, comprehensive management system.
>
> We have attempted to interpret standardized test results through our own knowledgeable personnel. This attempt has not been convincing and we need to reconsider the total testing program.

Preliminary discussions with administrators and the Merrimack Education Center Executive Board indicated that there was a need for a service with objectives along the lines of those proposed by the practicum. In the words of one administrator: "The idea of having an easily available route for obtaining and sharing important information is great."

Scope of the Problem

The breadth and interdisciplinary nature of the administrator's role requires rapid access to information in other areas beyond those few professional journals that he may read; this includes the management literature and such items as Training and Development Journal. Also, the extensiveness of Federal grants in Title I or Title VI or Title IV or the requirements of P.L. 94-142 present a need for access to government documentation, such as technical manuals, evaluation, and management or legal references, many of which are not held by the individual school district.

CHAPTER II

PRACTICUM GOALS AND OBJECTIVES

There were two major aims of this practicum. The first was to create and maintain an operational SDI system; the second was to aid potential users in the selection of appropriate information based on current awareness needs--information that they could use in work-related activities. This practicum was designed to provide the journal and report literature on a current basis so that educational practice might catch up with its own best exemplars as evidenced in the literature. It was the purpose of this practicum to bring the literature to the attention of practicing administrators to help in meeting the requirements for keeping up-to-date through continued professional growth.

Practicum Goals

Goals for this introductory practicum included the following:

1. To increase the administrator's reliance on print sources obtained from the formally organized report and journal literature
2. To decrease the percentage of working time that s/he spends locating relevant materials while increasing the number of useful relevant materials located.
3. To increase the number of visible innovations in the schools as a result of the administrator's utilization of information sources.

Objectives

Objective One

At the conclusion of this practicum, eighty percent of the administrators will indicate the usefulness of this SDI service to their school systems by reporting on the final questionnaire that the use of this service increased their current awareness of information by fifty percent.

Objective Two

Seventy-five percent of the participants will indicate on the final questionnaire that the SDI service is valuable in terms of time saved searching the journal literature and ERIC reports. These administrators will report that the SDI saves between ten and thirty percent of time they would have spent searching by manual means.

Objective Three

The administrators will report on the final questionnaire an increase in the use of printed resource materials in their various presentations (written or oral); sixty-five percent of the administrators will indicate that they have increased their use of printed resource materials by fifty percent and will specify a minimum of three briefings or reports (including agenda items, speeches, and the like) in which they used the informational resources.

Objective Four

Given awareness of the available SDI services for the school year following the practicum, sixty percent of the administrators will recommend that their colleagues utilize this service. This will be apparent by

comparing the referrals on the preliminary questionnaire with those on the final questionnaire and will evidence attitudinal commitment to the usefulness of the literature in journal or report formats.

Objective Five

By the end of the practicum, sixty percent of the administrators will indicate that they are willing to continue the SDI service using local funds and will purchase a subscription to the SDI service for the school year following the practicum. This indicates the use s/he expects to make of the service in his local district and his/her willingness to sustain (institutionalize) the service for a future period of time.

Objective Six

At the conclusion of the SDI practicum, sixty percent of the administrators will report a minimum of three new applications of the information retrieved to their current work activities, as measured by reports of program decisions or policy modifications on the final questionnaire.

CHAPTER III

REVIEW OF THE LITERATURE

This section of the practicum report describes the review of the literature on knowledge and practice related to information utilization. The primary objectives of the literature review were as follows:

- To collect educational information relevant to the concept of information utilization and use studies.
- To organize the information collected and provide a comprehensive bibliographical format of relevant information sources.
- To synthesize the information studies in order to derive practical implications for designing the practicum.

A detailed literature search and survey of existing knowledge utilization studies and delivery mechanisms that might be useful within this SDI practicum was undertaken using the ERIC file. Also searched were the Dissertation Index file and the National Technical Information Service (NTIS) and LISA files.* An off-line search of all relevant studies was obtained in each of these four data bases.

The first search was conducted on selective dissemination of information as a process. Subsequent searches located use studies related to the information gathering habits of administrators and the utilization and impact of resource materials in the field.

Research literature was reviewed in periodicals and research reports in the broad field of innovation and change in education. Information concerning dissemination and marketing of ERIC-like information systems was also reviewed.

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*LISA--Library and Information Science Abstracts

Fragmentation of the Knowledge Base

Significant R&D activites have been sponsored; many useful products and findings have resulted from national demonstration efforts reported in the literature. However, if payoff of these demonstration efforts is to be realized through improved school programs, schools must have ways of finding out about new trends and new technologies. According to Deal, Meyer, and Scott, "they [administrators] need knowledge that will enable schools to adopt and support new and highly complex instructional and organizational innovations."[1] And yet, administrators "have difficulty gaining access to information about promising practices even in their own region"[2] as well as at state or national levels. This was supported by the National Institute of Education:

> Schools and students have derived fewer benefits than they might from the knowledge and innovative practices produced through R&D. Information about newly-created knowledge and improved instructional practice and materials does not generally reach teachers and administrators in a useful and timely fashion.[3]

Accompanying major growth in R&D has been a concern that the newly created knowledge, methods, instructional materials, and strategies have not had much of an impact on practices at the local school level. Knowledge about exemplary practices is largely inaccessible

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[1] Terrence E. Deal, John W. Meyer, and Richard Scott, "Organizational Influences on Educational Innovation," in Managing Change in Educational Organizations, ed: J. Victor Baldridge and Terrence E. Deal (Berkeley, California: McCutchan Publishing Corporation, 1975), p. 109.

[2] Jana Johnson, Increasing the Use of Promising Practices Information by Local Educational Agencies, Report to the National Institute of Education, Washington, D.C., September, 1974 (Los Angeles, California: 1974), p. 7.

[3] National Institute of Education, Program Plan for FY 78, Report prepared for the Dissemination and Resource Group, Washington, D.C., 1976, p. 14.

and unused by the educational practitioner in the local education agency. Campbell[4] reported that "school districts have an obligation to provide information to the personnel of the system. Yet only about five percent of the approximately 40,000 school districts in the United States have a setup for processing and disseminating research findings." In a major national survey performed by Mary Havelock and Ronald Havelock investigating ten showcase innovations, only thirty-five districts out of a total of three hundred and fifty-three school systems mentioned use of ERIC; this represented only eleven percent of the districts surveyed.[5] Lindeman has also reported that "few school district superintendents could make reference to specific use of R&D and that the importance of R&D in local innovations was only dimly perceived."[6] Lee Thayer and others concluded that "research findings show little direct use by practitioners of the vast banks of educational knowledge."[7]

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[4] Roald Campbell, The Role of School Study Councils and Local School Districts in the Dissemination and Implementation of Educational Research, ed: Keith Goldhammer and Stanley Elam (Bloomington, Indiana: Phi Delta Kappan, 1962), p. 86.

[5] Mary Havelock and Ronald Havelock, Educational Innovation In the United States, Vol. I: The National Survey (Ann Arbor, Michigan: University of Michigan, 1973), p. 128.

[6] John Lindeman, Some Aspects of Educational Research and Development in the U.S., Report for the Organization for Economic Cooperation and Development, Washington, D.C., 1969, cited by: Havelock and Havelock, p. 131.

[7] Lee Thayer, et al., Toward A Reconceptualization of Knowledge Utilization in Education, Vol. I: Final Report (Iowa City, Iowa: Center for Advanced Study of Communication, University of Iowa, January, 1973), p. 26.

Furthermore, the dissemination and utilization system is fragmented; at present there are two hundred eight Federal statutes and regulations mandating dissemination of educational R&D with responsibility ascribed to dozens of different types of agencies.[8] Information systems are extremely diffuse and this makes it difficult for the practitioner to keep up with current information. This has been further substantiated by Johnson in a report prepared for the National Institute of Education (NIE).

> As yet there are only scattered information services and centers collecting and disseminating such information to LEA's; therefore, a general picture of the uses, and value of such information by a representative range of LEA's is lacking.[9]

Butler and Paisley have observed that "few local education agencies have dissemination services. . .[however] multipurpose centers are beginning to provide information retrieval and continuing education and technical assistance and instructional materials close to the schools."[10] Ross[11] was only able to cite one information center that operated strictly with local and state funds whereas there are five major

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[8]Richard Spivey, et al., Interstate Project on Dissemination: Report and Recommendations, Report to the National Institute of Education: The IPOD Report, Washington, D.C., January, 1976 (Washington, D.C., 1976), p. 26.

[9]Johnson, p. 7.

[10]Matilda Butler and William Paisley, Educational Knowledge Dissemination and Utilization (San Francisco, California: Far West Laboratory for Educational R&D, January, 1978), p. 14.

[11]Paul Ross, "The Establishment of An Educational Information Program and An Assessment of Its Utilization in Local School Districts," (Ed.D. dissertation, University of Massachusetts, 1975), p. 34.

dissemination systems supported by NIE/USOE:

1. ERIC--Educational Resource Information Centers
2. NDN--National Diffusion Network
3. RDX--Research and Dissemination Exchange
4. RDU--Research and Development Utilization Program
5. SEA/NDLP--State Education Agency

> One might at first think of these as 'Federal' rather than as 'nationwide' enterprises. Moreover, each one of the five is, without exception, a firmly structured system operating under government contract with paid professional personnel performing specialized functions within institutional frameworks in known locations.[12]

This lack of information service centers at the local or sub-state regional level and the lack of dissemination services within the districts contribute to the problem of the unavailability of knowledge access for practitioners in spite of the five major nationwide systems.

The Knowledge Explosion

The exponential growth of educational R&D has brought about a corresponding increase in the literature in the form of articles in periodicals, reports, and the like so that the educational practitioner cannot survey on his own the results of R&D going on in his field of

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[12] The IPOD Report (Spivey, et al.) and the DAG Report further describe these five national dissemination systems. Gerry Fletcher, et al., Dissemination Analysis Group: Report to the Dissemination Policy Council of the DHEW Education Division, Washington, D.C., January, 1977 (Washington, D.C. 1977), p. 35.

interest. A study by the National Science Foundation, which surveyed two hundred sixty-two journals, noted that only half were in existence ten years earlier and less than one-tenth were more than sixty years old. This journal population is expected to double every ten to fifteen years. At an average of one hundred twenty-six papers per journal per year, the annual output in the United States is considerably in excess of a million papers. The average number of articles per journal per year has increased fifty percent.[13] This geometric growth of the knowledge base is also responsible for over 365,000 books that are published annually.[14]

The knowledge explosion has further compounded the administrator's difficulty in keeping up with current trends and issues. The administrator's cursory review of a few journals is dwarfed by these statistics of knowledge explosion; the present system the administrator uses for the identification of materials relevant to his work, which he indicates is his number one purpose for reading the literature,[15] is not

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[13]National Science Foundation, Characteristics of Scientific Journals (Washington, D.C.: The National Science Foundation, NSF #64-20, August, 1964), p. 20.

[14]Alvin Toffler, Future Shock (New York: Random House, 1970).

[15]The Information Market Study, conducted by Hood and others, indicated that "finding answers to specific questions related to work was, on the average, the most frequent purpose for seeking out informational resources." The study organized the purposes for seeking information into eight major categories with factor one being termed "work-related vigilance." See Paul Hood, Colin Mick, and Robert Katter, The Educational Information Market Study, Vol. II: Summary Report (Berkeley, California: Far West Laboratory for Educational Research and Development, ERIC ED 135 411, 1976), p. 33.

sufficiently adaptable to rapidly changing requirements. No longer does his outmoded search behavior lead to the pertinent and relevant, current information. Administrators have little time to gather information and use it in their problem-solving activities.

To a large extent, the problem stems from the prolific growth of publications of reports and journals. While the traditional method of reviewing newsletters and the Table of Contents of several journals may have sufficed and was formerly adequate for keeping up with a literature volume of reasonable size, it becomes almost unmanageable with a larger volume of literature. ERIC (Educational Resource Information Center) has compounded the problem of the information explosion by circulating more material--some of which might otherwise never have seen the light of day.

The Educational Resource Information Center (ERIC) has been viewed as a linkage model for communicating the results of research to the educational practitioners. "However, studies of the ERIC system show that improved methods are needed to bring the ERIC knowledge base to the attention of practitioners."[16] According to the National Institute of Education, new approaches of information communication need to be based on the characteristics of potential users and their communication behaviors and information needs. And yet, prior to Klingenberg's unpublished dissertation, "no attempt had been made in the field of education to relate the reading behavior of school administrators to the innovativeness or adaptability of the school districts in which

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[16]William Paisley, "Improving A Field-Based 'ERIC-Like' Information System," Journal of the American Society for Information Science (November-December, 1971): 403. (ERIC EJ 049 246.)

they function."[17] "We know very little about what information gets used, by whom, for what purposes and with what, if any, impact."[18] The investigation by Chorness and Rittenhouse,[19] the Information Market Study conducted by Hood and others,[20] and the review of five major dissemination efforts by Emrick[21] are beginning to add to this knowledge about information uses and the impact of utilization in the schools.

The point has been reached where it is virtually impossible for the average administrator to keep informed in all subject fields and applications with which he may be involved in pursuing a particular program or project. Those who are actively engaged in development efforts, particularly with innovative projects such as Title IV-C, are especially concerned with the information explosion and their growing inability to stay abreast of new developments pertinent to their projects.

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[17] Allen Klingenberg, "A Study of Selected Administrative Behaviors Among Administrators from Innovative and Non-Innovative Public School Districts" (Ph.D. dissertation, Michigan State University, 1966), p. 42.

[18] Nathan Caplan, et al., The Use of Social Science Knowledge in Policy Decisions at the National Level (Ann Arbor, Michigan: Center for Research on Utilization of Scientific Knowledge, The University of Michigan, 1975), p. iii.

[19] Carl Rittenhouse and Maury Chorness, "A Survey of the Decision Processes and Related Informational Requirements for Educational Planning and Information," Paper presented at Western Psychological Association Convention, Vancouver, British Columbia, June, 1969, p. 8.

[20] Hood et al.

[21] John Emrick and Susan Peterson, "A Synthesis of Findings Across Five Recent Studies in Educational Dissemination and Change," Draft #1 (San Francisco, California: Far West Laboratory for Education R&D May, 1978.)

Time Constraints of the Administrator

The reason most administrators give for their cursory review habits when confronted with the overwhelming volume of literature is the lack of time. The administrator is a very busy person; he can rarely afford the luxury of browsing through a library to review the literature. Neither does he need a large list of irrelevant materials as might be provided through a bibliographic service. He needs the means for rapidly narrowing the search and retrieval process to those items that are truly pertinent to his work activities.

According to William Paisley,[22] relatively few research findings, curriculum developments, and arrangements for teaching and learning need to be highlighted from the "buzzing confusion of educational R&D and practice." What does need to be highlighted for the busy administrator should be selected because it is specifically related to his work role and activities of managing the schools. He needs a "relevance filter" screening out the irrelevant and providing information in a timely, current fashion.

The energy being expended by the administrator and devoted to the location and retrieval problem could be diverted to the improvement of practice and planning. As administrators describe the problem, "time and selectivity of materials" are crucial. Administrators report lack of sufficient time to study and review problems they are currently working on. They often must come up with solutions before having adequate time to fully analyze the problem. By trying to reduce the information overload problem, they may be leaving out some of the most

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[22] William Paisley, "Improving A Field-Based 'ERIC-Like' Information System," Journal of the American Society for Information Science (November-December, 1971): 403 (ERIC EJ 049 246.)

helpful and relevant information to select alternatives for problem resolution. In many cases, administrators "must resolve problems quickly and feel obliged to develop ad hoc solutions based on the experience and knowledge that they and their colleagues already have."[23]

Informal Channels of Access

Administrators utilize information gained through past experiences, interpersonal communication, and literature in meeting and seeking solutions to everyday problems. Paisley has indicated that professionals rely on other professional colleagues to serve as "relevance filters." [24]

> In any given decision-making situation, much of the relevant information under consideration is already known. Hard information, past experiences, intuition, values and other considerations all merge to form a frame of reference or perspective within which the social implications of alternative policies of a decision situation are evaluated.[25]

Building upon this interpersonal communication network, Havelock's design requirements for an effective information system are propitious. He conjectures that "the most important and potentially far-reaching function of an information system is the stimulation of information flow to and through a group of people called gatekeepers, who for various reasons communicate with large numbers of people and pass on information on a personal basis.": i.e., those individuals who "permit messages from the mass media to enter the interpersonal channels."[26] The research

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[23]John E. Muthard, "Rehabilitation Supervisors as Knowledge Users," Rehabilitation Counseling Bulletin (December, 1975): 439-440.

[24]William Paisley, p. 403.

[25]Nathan Caplan, et al., p. 18.

[26]Ronald Havelock, "Recommendations for the Dissemination Program of the National Institute of Education " (Washington, D.C.: National Institute of Education, 1972), p. 82.

has shown that these "gatekeepers," or linking pins as Likert[27] describes them, exert a disproportionate amount of influence in the adoption of new practices. They also serve as relevance filters for other practicing educators.

Despite this need for gatekeepers to be highly informed, the national Information Market Study conducted by Hood and others revealed that it is often difficult for administrators to locate information for others. Administrators in the market survey reported having more difficulty locating information pertinent to their work activities than do teachers or teacher educators or instructional supervisors. In instances of unsuccessful attempts to locate useful information for work activities, the following examples were cited:

- 43% were related to obtaining information for others
- 45% were of an administrative nature
- 24% were tasks requiring communicating information by papers, publications, etc.
- 21% were policy-related; and
- 17% were related to instruction[28]

Administrators have to do much interpretation and evaluation of information they supply to their school boards and subordinates. Whereas curriculum and instructional personnel do tend to use information from texts and curriculum materials in order to make decisions, and tend to be users of libraries, administrators most frequently rely on

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[27]Rensis Likert, The Human Organization: Its Management and Value (New York: McGraw-Hill, 1967).

[28]Hood, et al., p. 1-14.

interpersonal (telephone or "face-to-face") communications for their information. This tendency towards interpersonal contact for information to assist on the job has often been termed, somewhat disparagingly, the "old boy" network or a "seat of the pants" strategy.

Administrators As Gatekeepers

Administrators serve in a key role translating new knowledge of the literature to subordinates, connecting the school system to informational resources external to the district. It is self-evident that an informed administrator can provide needed information to school boards, subordinates, his colleagues, and the voting public because of his key role within the educational enterprise. The individual administrator performs the crucial role of linking pin or gatekeeper; thus, he not only enhances the "flow of knowledge, but also serves as a filter in that he selects that which will be transmitted to the client system."[29]

Local, easily accessible sources of information are preferred by the administrator and are used more frequently than sources external to the district. These include curriculum supervisors and other people in one's own district, colleagues in neighboring districts and subordinates in the same district. By far, the largest single source of information, perhaps one-fourth to one-half of the total, is the administrator's

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[29]John McCracken, "The Utilization of Information by State Supervisory and Teacher Education Personnel in Vocational and Technical Education " (Ph.D. dissertation, Ohio State University, 1970), p. 22.

review of a few journals and several newsletters that cross his desk. While these may be helpful sources, it is becoming impractical to cover the many subject fields that fall within the interdisciplinary and generalist nature of the school system manager's role today. In general, the administrator has no way of knowing where a particular document may be obtained and a "trial and error" search can become expensive if the telephone is used and certainly time consuming. Generally, he might make three calls to locate the information and then give up. Providing a locating and accessibility service would clearly help to ameliorate this situation. However, a practicum could not expect to completely overcome the administrator's reliance on oral sources of information but can complement the use of face-to-face and telephone contact with colleagues by offering resource literature in the form of abstracts, documents and current awareness articles.

Obviously, "innovators must secure new ideas and information concerning these [new] practices through impersonal sources such as mass media and research reports." [30]

Demeter reported that the "presence of an individual 'spark-plug' who champions the introduction and diffusion of new materials appears to be very helpful. The early introduction and spread of new ideas is the result of a deliberate design and program for keeping the school system in touch with the latest educational developments." [31]

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[30] Allen Klingenberg, p. 23.

[31] Lee H. Demeter, "Accelerating the Local Use of Improved Educational Practices in School Systems" (Ed.D. dissertation, Columbia University, 1951), p. 22.

It seems clear that if we could reach the administrators, and supply them with current information, we would be able to impact on innovations in the schools. The information utilization process is highly correlated with stimulating the diffusion of innovations in a community. And, research has shown that superintendents in innovative districts utilize more professional literature in their work.[32]

Impact of Innovations in Schools

A distinguishing characteristic of an innovative school system is that it arranges for externally generated information to flow continually into its decision-making processes. Indeed, the life of the individual school district depends upon the exchange of energies and information with other organizations. According to Miles,[33] this "state of health" of an educational organization can tell us more than anything else about the probable chance of success of any particular effort at initiating change and impacting upon student performance. The input of resources is significant to this organizational health concept.

In addition to requiring data about the function of their organization, administrators seek out current, reliable information about what other schools, agencies, and individuals are doing and what resources are available. The literature on educational change shows that the most

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[32]Allen Klingenberg, p. 109.

[33]Matthew Miles, Innovation in Education (New York: Columbia University, 1964), p. 89.

innovative administrators seek out the most sources of relevant information. Also, the literature has shown that the innovative performance of the schools can be further related to student gains. In a study by Doughty[34] student performance was cited by every participant as the criterion for assessing innovations in the schools. Teachers in the innovative setting pointed to high school records as indicating greater learning by students when innovations were adopted. The teachers mentioned improved class work by students that confirmed the "value of their innovations," and improvements on standardized achievement tests were cited as objective measures of the innovative programs. Furthermore, the teachers indicated that individual study and resource materials were major sources of information whereby they could gain access to innovative ideas. Through their own initiative and efforts of individual study teachers reported they gained the knowledge and techniques needed to cope with the educational innovations introduced.

The Havelock study cited earlier,[35] which reviewed showcase innovations in 1973, indicated that "to an overwhelming degree, positive consequences were cited for the showcase innovations," and "consequences were reported most often for students" (in seventy-six percent of the cases). Among the specific consequences reported for students, improved attitudes toward self and school were cited by the teachers as the most frequent type of gain followed by gains in scholastic performance.

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[34] Billie Doughty, "Some Factors Affecting Innovation as Identified in Educational Literature and as Perceived by Selected Teachers" (Ed.D. dissertation, University of Alabama, 1966), p. 179.

[35] Havelock and Havelock, Educational Innovation in the United States, p. 15.

The research reported indicated that the behaviors and actions of school administrators are directly associated with the degree of innovativeness of their school systems.[36] However, the literature review also showed that the sequence from R&D to utilization is seldom followed in actual practice and that special efforts are required to assure that the results of the research are applied. In a study of information uses, Brittain listed developing research projects that served as a stimulus for thought, or served as a basis for some direct action such as goal setting or decision making.[37]

This concept has been further developed in "levels of use" and levels of utilization as defined by the Center for Research on Utilization of Scientific Knowledge, Ann Arbor, Michigan.[38] Several other authors have advanced a stage theory of problem solving that eventually leads to application and adoptions of innovations. These theories include the following five perspectives enumerated below.

1. Ronald Havelock's six-stage process of linkage (relationship, diagnosis, acquisition, choosing, acceptance, self-renewal);[39]

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[36]Allen Klingenberg, p. 18.

[37]John Brittain, Information and Its Uses (New York: John Wiley and Sons, 1970), p.38.

[38]Nathan Caplan, et al., p. 13.

[39]Ronald Havelock, A Training Model for Change Agents in State Education Agencies (Ann Arbor, Michigan: Center for Research and Study of Utilization of Scientific Knowledge, The University of Michigan, 1970), p. 126.

2. Altman's five-stage process (knowledge, attitude-information, decision, initial implementation, sustained implementation)[40]

3. The National Institute of Education's four stage process defined by the Dissemination Analysis Group (DAG); stages consist of spread, exchange, choice, implementation[41]

4. Clark and Guba's diffusion-adoption paradigm (dissemination, demonstration, installation, and institutionalization)[42]

5. Klausmeier's four-stage process of innovation for curriculum and program adoption: awareness, training for implementation, maintenance of the installation, and refinement[43]

Most of these models begin with an awareness stage or knowledge of the current research and literature--ranging from awareness of the existence of a program to an actual decision to implement or adapt the program in a given setting locally. Regardless of the model, the search process and retrieval of relevant informational resources is essential. If this search process is conducted haphazardly, the problem solving process breaks down. This has been substantiated in the literature by Havelock and the other authors in their writings.

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[40] T. Altman, A Study of the Dissemination of Your Chance to Live (Washington, D.C.: DCPA, 1975).

[41] Gerry Fletcher, et al., Dissemination Analysis Group (DAG): Report to the Dissemination Policy Council of the DHEW Education Division, Washington, D.C., January, 1977 (Washington, D.C., 1977), p. 38.

[42] Egon G. Guba, "Development, Diffusion and Evaluation," in Knowledge Production and Utilization in Educational Administration, ed: T. Eidell (Columbus, Ohio: University Council of Educational Administration, 1968), pp. 45-46.

[43] Douglas A. Paul, "The Diffusion of an Innovation through Interorganizational Linkages: A Comparative Case Study," Technical Report Number 308 (Madison, Wisconsin: The University of Wisconsin, 1974), pp. 19-22.

Four levels of utilization have been defined from the literature review[44] and will be utilized to draw implications from the questionnaire data. The administrators will be surveyed as to their use of the SDI information sent to them over the duration of the practicum based upon the following four levels:

TABLE 10
LEVELS OF UTILIZATION

Utilization Level	Criteria for Assigning Utilization Score
One	5-10 instances of use with good supporting evidence
Two	2-4 instances of use with good supporting evidence
Three	1-7 instances of use with meager supporting evidence
Four	No instances of use reported

According to Klausmeier,[45] it takes approximately three years to work through the hierarchical stages he has proposed. Therefore, it would be expected that the types of applications of information made by the administrators in this one-year practicum would be at the awareness or "spread" level as opposed to a more substantive level of application. "Compounding the measurement and inference problem surrounding

[44] Nathan Caplan, et al., p. 15.

[45] Herb Klausmeier, "Individually Guided Education in the Multiunit Elementary School: Guidelines for Implementation" (Madison, Wisconsin: University of Wisconsin, 1970), p. 58.

in particular behavioral outcomes, it is also true that outcomes have different latencies, ranging from brief in the case of knowledge to indeterminately long in the case of behavior. . . ." [46]

Furthermore, Paisley and Paisley indicate that behaviors change over time:

> Educators whose knowledge and attitudes have been affected in a particular way by a linkage program will, over a period of time, continue on to trial and adoptions; . . . measurable positive changes in teacher [administrator] competencies, in instructional practices, etc., may be accepted as surrogates for improvement in students' learning experiences.[47]

Wolf confirmed Paisley's observations that innovations described hardly influenced environments beyond that of the subject and his immediate associates.[48]

Havelock has further confirmed the difficulty of the measurement task indicating that knowledge of the resources must precede use of the information in local decision making; "studies show that knowledge of the ERIC system is a sometime thing."[49] Paisley describes

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[46] Paisley and Paisley, Communication for Change in Education, p. I-12.

[47] Ibid., p. 42.

[48] W. Wolf and A. Fiorino, "A Study of Educational Knowledge Diffusion and Utilization." (Amherst, Massachusetts: University of Massachusetts, ERIC ED 061 772, 1972), p. 88.

[49] Havelock and Havelock, p. 69.

the lack of availability of "use studies" in terms of behavioral changes on the part of educators.

> Certainly behavior change in the form of improved educational practice and increased professionalism in education is the penultimate criterion of linkage effectiveness, with the ultimate criterion being student welfare. However, behavioral outcomes will not in this decade of evaluation research be measured or causally connected to everyone's satisfaction.[50]

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[50] William Paisley, "Information Needs and Uses," in Annual Review of Information Science and Technology, ed: C. Cuadra (Chicago, Illinois: Benton Publishing Company, 1968), p. 28.

CHAPTER IV
EXECUTION OF THE PRACTICUM

An Overview of the SDI System

Selective Dissemination of Information (SDI) is a concept that is relatively new to education. The term SDI is used to denote a computer-assisted system for selectively bringing published papers or reports to the user based on a comparison of the subject content with the profile of the user's interests. SDI is a system developed by the late Hans Peter Luhn at IBM in 1959[1] for alerting participants about new publications such as journal articles and conference papers.

SDI is a process that provides linkage to relevant information in order to support the introduction of planned change. In the past, SDI was largely performed manually by information specialists, or the practitioner himself. As a result, such services were available only on a limited basis, mostly in industry where the incentives to keep up-to-date and current are related to competition and high technologies.

Functions of SDI

SDI is a tool for managing the exploding volume of information. It is the reverse of the traditional library operation.

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[1]Proposed almost twenty years ago, SDI systems have grown rapidly with the development of high-speed computers and efficient operating systems utilizing magnetic tape data bases containing title, references, index terms and abstracts of published articles and reports. However, the SDI systems have not yet made a major impact on academic circles.

> A library stores documents and waits for users to come in the door. An SDI system stores representations of users' interests, and as documents come in the door, the system disseminates to users notices of documents that appear relevant to their interests.[2]

The SDI system is reciprocal with access based partly on user needs, partly on regular dissemination of varied information to those who will benefit from the suggestions it contains. Although most other information services and products are prepared for groups rather than for individuals, the trend in this type of selective dissemination system is towards progressively smaller, more specialized groups and individuals. With increased capacity of computerized retrieval systems, the hardware now exists to individualize the retrieval of R&D information based upon a user's unique interests.

SDI systems have four major functions:[3]

1. To acquire current information, usually in the form of papers, articles or reports.
2. To describe the needs of users or user groups.
3. To match user needs with the information sources.
4. To inform each user of the items most closely corresponding to his needs and interests.

Advances in the 1960s in computer information processing and high speed copying have made automated SDI systems technologically feasible.

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[2]National Aeronautics and Space Administration, "Implementation, Test and Evaluation and an SDI System for NASA Scientific and Technical Information." Final Report (Yorktown Heights, New York: IBM Corp., 1966), p. 1.

[3]Milton Drott, "Models and Measurements of User Information Needs in the Selection of Systems for the Selective Dissemination of Information." (Ph.D. dissertation, University of Michigan, 1973), p.2.

The growth of ERIC in the 60s and information service centers in the 60s and 70s have further made this type of information accessibility available to the practitioner in the local district.

Establishing SDI refers to services that match documents against the needs of a single individual rather than a larger group of individuals and do so on a current, active arrangement whereby the administrator need make only one initial request to obtain a monthly service. The computer automatically prints out the consecutive monthly searches without the administrator having to reactivate his request. Once the individual's interest profile is stored in the computer, and the individual response delivered, the needs can be aggregated for the entire population and for subgroups within the population.

Establishing the Operating SDI System

Although it is easy to discuss the four separate functions of an SDI system, practical experience dictates that everything is related to everything else. The SDI system will be treated here as a totality rather than broken down by the separate practicum objectives.

A tentative model for SDI and the operating procedures were based on insights gained from the literature in such areas as: (1) educational information systems and computer application in education; (2) knowledge utilization and the dissemination of information; and (3) current practices involving the linkage of local school systems with national R&D efforts. Only two SDI programs were located in the field of education through this preliminary search; one was in Canada and one was in Sweden. The first operation of an SDI service on a

national scale was conducted by the CAN/SDI System at the National Science Library, Ottawa, Canada. Sweden's SDI service to industry and academic libraries was also explained in the literature.

Procedures and Activities

The activities of this practicum were aimed at providing current awareness information monthly to the administrators based upon their individual user interest profiles. Monthly computer printouts were produced for each participant by matching his individual descriptions of needs on a profile against computer tapes as they are available from the ERIC (Educational Resource Information Center) data base.

The SDI service included bibliographic searching, locating individual items, and information regarding their accessibility for educational administrators in the Merrimack Valley. The service thus provided access to the latest references and provided these to the busy administrator on a monthly basis since the computer was activated by the searcher at the Center each month when the ERIC updated tapes were added to the files. Thus, the simple purpose for this SDI design was to ease somewhat the administrator's task by telling him automatically, with minimum effort on his part, what new information might be useful in his work. The SDI system is a comparison between the ERIC index "on-line" (i.e., stored on magnetic tape at the central computer center in New York at Bibliographic Retrieval Service) in the machine's memory and the interests described by the administrators. To make the comparison, the individual's interests also must be fed into the machine. This first requires that they be described in appropriate language--the description is called the individual's interest profile.

These procedures are more thoroughly described in the following paragraphs under SDI features.

SDI Features

There were three major features to the SDI design: namely, selection, notification, and feedback.

1. Selection. The individual's interest profile terms were typed into the teletype terminal, just as he described them on the interest profile (cf. Appendix D), and thus became part of the SDI program tape. The typical user had already established personally satisfying ways and means of selecting and uncovering useful information and the machine system was meant to complement his personal interests. Thus, the user profile was translatable into the mechanics of the computerized system. When an SDI run was made, the machine compared profiles with the stored index containing the current ERIC updates for the month. When profile and index produced a match, the machine printed out the "hit." In the SDI design, selection was based upon a profile of interest, characterizing the user's information requests, including such items as the names of authors, significant words (descriptors from the ERIC thesaurus) appearing in the titles of articles, key journals, and the like.

2. Notification. Participation in the SDI system resulted in the mailing of announcements to the administrator consisting of journal or ERIC citations matching the requirements of his unique profile. With this printout, containing the title, report number, source, authors, and publishing date, an abstract was included in the case of ERIC

documents; however, not all journal articles indexed in Current Index to Journals in Education were abstracted on the computer tapes.

The user's interest profile and the document contents on the tape were the two basic components of the SDI system with the participant being notified when there was a match between the two. The computer functioned to compare the interest terms from the user's profile, which were typed in by the operator through the teletype terminal, with all key words assigned to the content of the ERIC documents. The basic task was one of comparison.

Comparison of User and Document Profile. The object of the comparison task was to determine the extent of match between a given profile pair, which in turn determined whether that user received a notification of that document. This type of machine matching and searching was more thorough than human searching through manual indices. The computer was able to search every profile term against every citation on the data-base; no reference was overlooked.

Profile Construction. The key to the SDI system design was the profile. A profile, a statement of an individual's search request, was constructed by the searcher based upon the interest checklist that the participant mailed to the information center. The searcher put the profile into machine readable form on the teletype. Two guides for preparing profiles were available for searchers who were preparing profiles.[4]

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[4]NASA/IBM, "Implementation, Test and Evaluation of an SDI System for NASA Scientific and Technical Information," p. 8.

Profile Modifications. Profile preparation by a user occurred over a period of time during the one-year practicum. According to Burton, the preparation of a profile by a user involves a learning process; after the user enters a profile in the system, he can revise it on the basis of the notifications he receives, deleting index terms that bring him irrelevant notifications and adding terms that he finds in relevant notifications. When the emphasis of the administrator's work changes, it is necessary to adjust the profile accordingly, either by deleting old concepts and replacing them with new selection patterns, or by readjustment of existing patterns through modification.[5]

All document indexing and abstracting was prepared by ERIC central clearinghouse and furnished by the monthly updates of the standard ERIC magnetic tapes as prepared by Bibliographic Retrieval Services, Inc. for entering into their central computer. The ERIC documents were all indexed in natural language statements and dissected into individual concepts and appropriate keywords using the ERIC thesaurus. Logical statements (boolean logic) using these keywords were then compiled for each natural language phrase on the user's profile in order to retrieve the documents for a particular administrator.

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[5] Hilary Burton, "Techniques for Educating SDI Users," Special Libraries (May-June, 1975): 254.

Description of the SDI Package. Notification of the SDI printout was mailed monthly to the client. The contents of each package mailed included information to satisfy the various requirements of the administrators. Abstracts of relevant documents and a bibliographical format constituted the fundamental package. Also included was a feedback form to facilitate two-way communication as the user tried the service. The total content of the SDI package consisted of the following items:

- How To Interpret An Abstract

  Helpful hints to guide users in understanding an abstract (Appendix E)

- ERIC Abstracts

  Abstracts selected by the computer for their relevance to the specific client's profile

- A Feedback Form

  A means to provide suggestions on improving the profile and the SDI service (See Appendix F.)

- A Cover Letter

  A friendly, descriptive message to the client

- A Request Form

  An order blank for requesting complete ERIC documents or journal articles when the abstract appeared relevant

The personalized, monthly listing of references, averaging approximately twelve to fifteen items, represented a dependable source of useful information for the administrator. Since this was an individualized process, the response of the SDI system was individualized. Timely packets of materials in the interest areas identified were provided, and those individuals who had special interests in a certain

topic received a computer printout listing citations and sources of reports and ERIC documents.

3. Feedback.

Making these references available, in the form of bibliographic citations, encouraged the administrators to request full copies of journal articles and other related reports. When articles in the professional journals and report literature were deemed to be of paramount importance, the Center assisted the administrators in locating items that were not owned by the individual school district. Fortunately, the University Microfilms, Inc., in Ann Arbor, Michigan, instituted a major new program to provide hard-to-locate journal articles through on-line teletype communications the same year as the practicum. Using the computer terminal to request these articles from UMI provided a rapid delivery service for the practitioners in their schools.

From the listing of the citations on the computer printout, the administrators selected the accession numbers of those documents that they would like to have duplicated and mailed directly. Additionally, the administrators were able to select articles featured in the newsletter and request copies of reports and multiple copies for their staff members. Thus, communications were maintained with the client throughout the practicum. Access, awareness information, appraisal and feedback were provided by the Center staff. The probability of the administrator being able to locate pertinent references greatly increased by use of the computer selection process and the administrator did not waste time in searching for materials manually scanning through a large number of

sources. Since the administrator's retrieval process was made less tedious by the computer, this allowed more time for reading and planning. The computer also ensured that the most relevant materials were identified based on the administrator's priorities.

The information services staff obtained and maintained the interest profile on each of the participants and received feedback based upon requests for articles and a monthly feedback form. The reply/feedback cards were added to the mailing envelopes for the purpose of requesting copies of items notified or commenting on the effectiveness of the service; however, in many cases the client telephoned in his request or wrote directly on the printout and returned the complete computer printout with items checked that he wished to request. Only fifty of these feedback sheets were returned. Most participants were so familiar with the Center that they knew staff by name, saw staff at workshops, seminars, or other meetings held by the Center, or in at least three cases, kept their own request/order forms that they used systemwide.

Feedback from the evaluation sheets was also used to modify the administrator's profile. Often the journal articles or ERIC documents requested were mailed out so quickly that the administrator was receiving a new package, with a second feedback form, within the week. This kept a constant stream of information circulating between the Center and the clients, almost weekly. In order to maintain good rapport with users and to be sure that their profiles were functioning efficiently to provide the desired information, information center staff used many avenues of communication with users including the

following means of two-way exchange:

1. Unlimited profile changes
2. Monthly feedback sheet
3. Telephone contact
4. Mailing of ERIC documents and journal articles immediately upon request
5. Comments of profiles to suggest changes
6. Letters enclosed with SDI package mailings.

It was believed that these personal services would provide for more efficient and articulate feedback to the information services staff regarding needed changes or improvements in the system. A quarterly newsletter was also mailed to each participant to keep administrators informed of current trends, issues, and topics that were located by the computerized services (see Appendix G). Materials featured in the newsletters included journals, periodicals, ERIC abstracts, Federal/State government documents and monographs.

The features of the SDI system are illustrated in Figure 3, a minimal SDI system.[6]

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[6]Adapted from NASA/IBM, "Implementation, Test and Evaluation of an SDI System for NASA Scientific and Technical Information," p. 15.

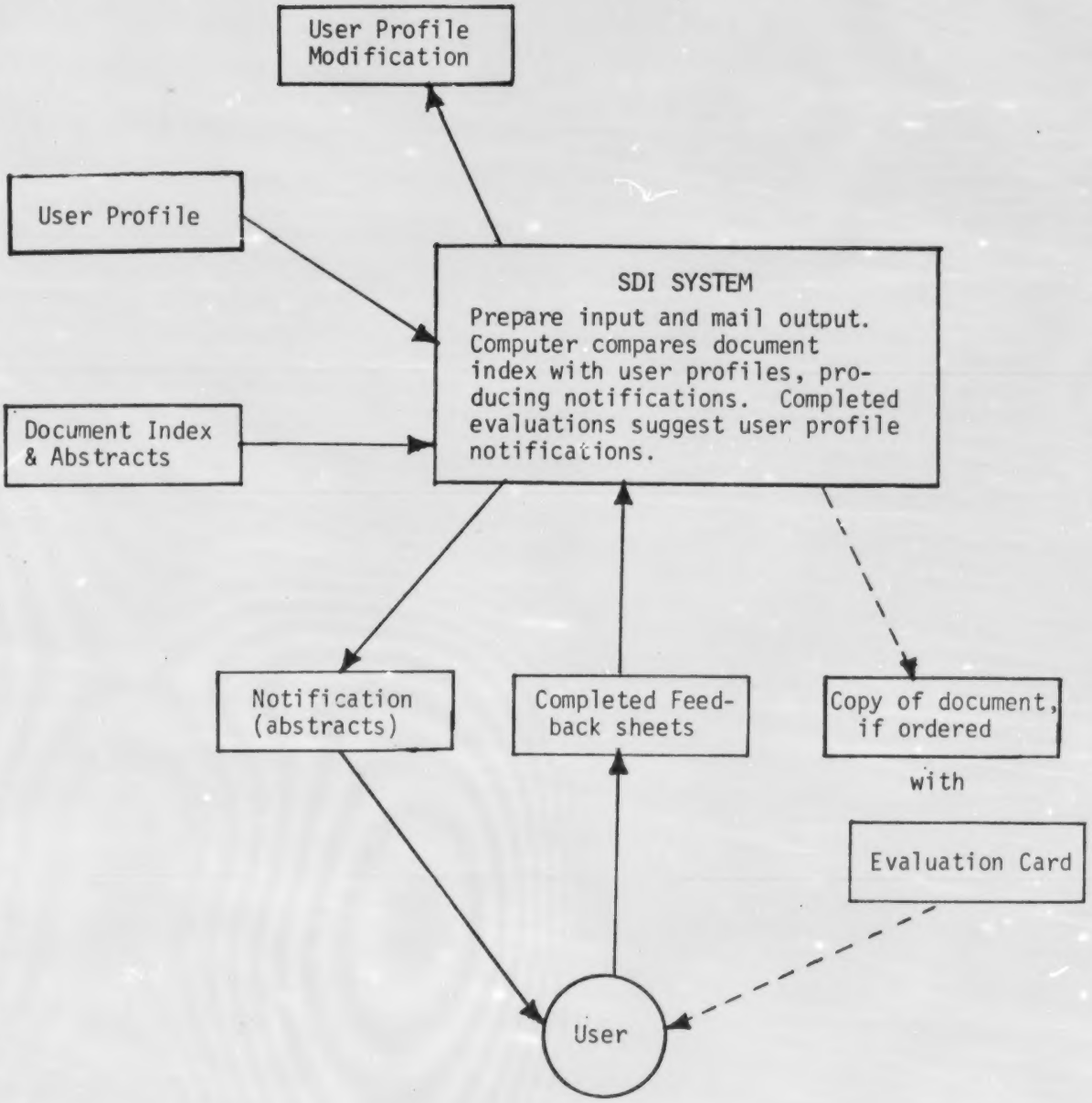
User Profile Modification
User Profile
SDI SYSTEM
Prepare input and mail output. Computer compares document index with user profiles, producing notifications. Completed evaluations suggest user profile notifications.
Document Index & Abstracts
Notification (abstracts)
Completed Feedback sheets
Copy of document, if ordered
with
Evaluation Card
User

Figure 3. A Minimal SDI System

CHAPTER V

EVALUATION

This practicum was conducted to examine how an SDI system would influence change in the schools when specific information items were directed to administrators. Using relevant elements discussed in the literature, the writer constructed a questionnaire to gain information from the administrators relative to their use of information. This chapter presents tabulations and brief descriptive narratives of the data gathered from the participating administrators at the close of the practicum period.

Paisley and Paisley suggested three major categories for evaluation of an information center program: (1) services; (2) outcomes; and (3) costs.[1] The outcomes or effects in the client system should measure (a) changes in the clients' knowledge and attitudes and lead to (b) changes in clients' behavior and effects on the system. The questionnaire designed for this practicum measured outcomes subjectively by asking clients what they believed the outcomes were. Havelock has commented that when a project like this is evaluated, many measurable benefits might not be generated for one or two years, even though the program worked perfectly.[2]

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[1]Matilda Paisley and William Paisley, Communication for Change (Berkeley, California: Stanford University, 1975), p. 25.

[2]Ronald Havelock, A Training Model for Change Agents in State Education Agencies (Ann Arbor, Michigan: CRUSK, University of Michigan, 1970), p. 93.

Final Questionnaire

A final questionnaire survey was carried out by the information services personnel to collect data on the users' reactions. One questionnaire and cover letter (see Appendix H) were mailed out per SDI profile to thirty-five users in March of 1978, with a request to return the questionnaire within three weeks. The questionnaire was designed to collect information on (a) reactions of respondents to the SDI service; (b) its impact on their retrieval of current awareness information; and (c) their utilization of the information retrieved.

Evaluation of Six Practicum Objectives

Objective One: At the conclusion of this practicum, eighty percent of the administrators will indicate the usefulness of this SDI service to their school systems by reporting on the final questionnaire that the use of this service increased their current awareness of information by fifty percent.

Thirty-two participants returned the final questionnaire for a response rate of ninety-one percent. Question number twelve on the final questionnaire asked participants to respond to several linkage outcomes on a scale ranging from rarely (1), to occasionally (2), and frequently (3). A sub-part of this question asked the participants if the SDI service increased their general knowledge in the field of education. Using the three-point scale, a mean of 2.66 was obtained. All respondents indicated either two or three with sixty-six percent indicating "frequently" and thirty-three percent responding "occasionally."

Question number sixteen asked respondents to reply to a scale indicating improvement they had realized during the practicum over their previous, individual efforts to keep current on up-to-date information. The logarithmic scale, based on the research prepared by Drott,[3] asked participants to rate the value attained by marking a percentage scale graduated from 0% to 200%. The selected value rating was then interpreted as a percent improvement over the value of their individual activities. Question sixteen, sub-part (a) stated:

> *Using the scale described, please rate the incremental value to you of a monthly mailed SDI announcement to help keep you informed of current documents.*
>
> *0%* ——— *200%*
>
> *Value of your individual activities* ——— *Improvement using the SDI service*

Table 11 indicates the responses of participants on this incremental scale describing the percent improvement over their previous individual activities to keep current on information.

TABLE 11

VALUE OF SDI ANNOUNCEMENTS TO HELP KEEP ADMINISTRATORS INFORMED

Percent Improvement	Percent of Administrators Selecting This Response
10%	0
25%	0
50%	33%
70%	27%
100%	13%
150%	13%
200%	13%

[3] Milton Drott, "Models and Measurements of User Information Needs in the Selection of Systems for SDI" (Ed.D. dissertation, University of Michigan, 1973), p. 28.

This objective can be considered as met since all participants responded to question sixteen that there was an incremental value of 50% or greater in terms of their current awareness.

The average percent increase for all participants was ninety-five. Thus, the computer SDI service nearly doubled the individual administrator's efforts to keep current through his typical methods.

In a general assessment of the usefulness of the SDI program, the respondents evaluated the SDI service as being very useful. Three questions related to the administrator's general attitude towards the service: numbers three, four and five. These questions asked the respondent to rate the SDI service on a six-point scale (six = high; 1 = low.) Table 12 illustrates the administrators' answers to questions revealing their attitudes toward the SDI service.

TABLE 12

GENERAL ATTITUDES
TOWARD SDI

Question Number	Variable	Mean
3	overall opinion	5.14
4	keeps administrator informed	4.59
5	contribution to work effort	4.68
	Aggregate Mean	4.80

Participants overall were satisfied with the SDI service and believed that it had contributed to their work efforts. Furthermore,

participation in the practicum had led to an increase of thirty-two percent, on the average, in usage of ERIC for current awareness purposes. Subsequent discussion with administrators in the practicum revealed that increased usage for current awareness purposes usually resulted from a favorable reaction to the printout and the interaction with the searcher at the information service center.

In a one year time frame, evidence of this awareness level behavior was the easiest to measure. Therefore, this practicum expected that the largest percentage of administrators would report an awareness increase on the final questionnaire. Indeed 100% of the individuals responding indicated that the SDI service had increased their awareness on the incremental scale by fifty percent or more.

Objective Two: Seventy-five percent of the participants will indicate on the final questionnaire that the SDI service is valuable in terms of time saved searching the journal literature and ERIC reports. These administrators will report that the SDI service saves between ten and thirty percent of the time they would have spent searching by manual means.

The participants were provided a listing of advantages and disadvantages to the SDI service that they could choose from including "the service is time-saving." Seventy-seven percent indicated this response on their final questionnaires. On question number eleven, participants were asked to provide a percentage of time that they believed they saved (a) scanning current journals; and (b) scanning indices or table of contents in journals. Table 13 indicates their responses to these two parts of question eleven.

TABLE 13

ESTIMATES OF TIME SAVED IN PERCENT

Activity	Reduce time by: 5%	10%	15%	25%	30%
		Percent of Respondents			
Scanning Journals	7%	14%	29%	14%	36%
Scanning Indices or Table of Contents	7%	29%	0	36%	29%

Thus, 100% of the participants indicated that they can save time with this service. The scale provided to the administrators did not go high enough since 36% of the administrators indicated they were saving 30% of the time that they would have been scanning journals. Thus, had a higher scale been provided, the response would have stretched out at the top of the scale.

The evaluation of the practicum can be gauged on this variable of time saved; this is valuable time that the administrator can divert to other uses in managing the school system. The cost-effectiveness of the SDI service can also be judged on this basis since the administrator's time is the most expensive factor in the school budget. As administrators in the practicum became more reliant on the computerized SDI service, the amount of time they spent locating relevant materials on their own decreased since many of these functions were handled by the machine. Therefore, the administrator's valuable time, valued at upwards of $25.00 per hour, was better spent on reviewing the articles that the computer retrieved.

The more time an invididual spends locating useful information, the less time he has available to spend on reading relevant items. The Monsanto Research Corporation found that "each user saved three hours per week in literature-searching activities."[4]

The two features of the SDI service that appeared to practicum participants to be greatly appreciated (question seven) were:

(1) it saved time by allowing users to reduce the time spent in searching the literature. This was mentioned as an important advantage of the service by 86% of the sample.

(2) the service retrieved references that would not otherwise be located. This advantage was mentioned by 82% of the sample.

Respondents were also given an opportunity on question number seven to indicate any disadvantages to the SDI service. The most frequently mentioned disadvantage of the services was: there was not enough information on the printout. This would appear to indicate that the abstract alone was not sufficient for most of the participants to decide if the material was relevant and worth reading. According to NASA/IBM[5] researchers, the key to understanding any disappointments among users, in every case, was profile adequacy. They recommended starting with the assumption that whatever profile you produce on the

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[4]Wilfrid Lancaster, "Let The Computer Select Your Reading List," Datamation, 16 (Fall, 1970), 91.

[5]NASA/IBM, "Implementation, Test and Evaluation of an SDI System for NASA Scientific and Technical Information," p. 6.

first try must be reviewed frequently and refined as necessary until you are satisfied that the SDI system is working well. The statistics from the NASA/IBM report indicated that of each one hundred notifications, forty percent were of interest and relevance. Through changing the matching algorithms of the computer's program and by profile refinement, their hit average increased to 65% and they predicted that it was possible to attain 75% hit accuracy.

Profile modifications are aimed at reducing the level of "noise" or irrelevant abstracts. The other factor involved is the contents of the stored abstracts; certainly every ERIC clearinghouse has personnel doing indexing and abstracting with different styles. There has been a major effort to "clean up" the ERIC indexing and assigning of key words (descriptors and identifiers) from the ERIC thesaurus.[6] Also, within the coming year, ERIC central processing staff is considering the addition of many new descriptors and major changes to the thesaurus. All of these factors will improve the hit average on monthly SDI searches as well as retrospective searches.[7]

Replies to question number seven were examined in relationship to those to question number eleven. Of all the users who considered the time-saving feature to be an important advantage (question number seven) 77% said they could reduce the time spent scanning current journals.

[6]ERIC Document Reproduction Service, "Identifier Clean-Up Program," ERIC Data Base User Interchange (April, 1977): 6.

[7]As noted in Chapter IV of this practicum report, only the ERIC documents are certain to have abstracts. Journal articles are not always abstracted. If every item were abstracted, it would increase the hit ratio.

Objective Three: The administrators will report on the final questionnaire an increase in the use of printed resource materials in their various presentations (written or oral); sixty-five percent of the administrators will indicate that they have increased their use of printed resource materials by fifty percent and will specify a minimum of three briefings or reports in which they have used the information.

Although the Havelock study and the Information Market Study cited in Chapter III of this practicum report indicated only a nine percent and one percent utilization of ERIC, respectively, some participants in this practicum tended to be ERIC users from the beginning. It appears that the ten years that have been devoted to providing information services by the Merrimack Education Center have paid off in terms of information retrieval since the administrators in this practicum reported utilization levels above the national samples. Table 14 shows the number of persons responding that they used ERIC on the practicum preliminary survey. The table reports utilization levels on a five-point scale showing that previous subscribers tended to use ERIC more than the previous non-subscribers.

TABLE 14

ERIC UTILIZATION

Administrator Category	Very Frequently	Moderate Frequency	Occasionally	Infrequently	Not Avail.
Previous Subscriber	25%	25%	25%	3%	0
Non-Subscriber Prior to Practicum	10%	9%	35%	15%	0

On question number eight, participants were asked: "Has there been an increase in your use of ERIC or journal articles?" All participants responded yes. This question also asked by what percent they had realized an increase. The average for all participants was forty-two percent. Therefore, the usage of current information sources increased, and the administrators found that it was less effortful for them since the computer nearly doubled their ability to retrieve current information.

Given the administrator's recognized preference for informal, oral channels, we may have completely saturated him with impact in print form and the forty-two percent increase is realistic. It appears that all other attempts to reach these administrators should be through seminars, staff development meetings, curriculum meetings and the like while maintaining the current level of print information flow. This interpretation is significant for the information service program budget in terms of allocating more funds for seminars and training workshops. Additionally, the staff development division of the Merrimack Education Center, coordinated by Ms. Carol Dolan, can utilize the print information when providing workshops or when hosting curriculum or in-service commission meetings. Print information in this way will further complement the informal, oral communication channels.

Question number nine asked administrators if they selected relevant notifications and looked them up. Using a five-point scale of always, often, frequently, occasionally, and rarely administrators reported that they frequently retrieve the actual documents. Table 15 illustrates responses to question nine.

TABLE 15

ADMINISTRATOR'S RETRIEVAL OF RELEVANT ARTICLES

Articles Retrieved (Frequency)	Percent Responding in Category
Always	16%
Often	21%
Frequently	42%
Occasionally	21%
Rarely	0

Question number ten asked administrators to indicate what they did with the information once it was located. The responses were directly keyed to the four targeted uses in objective three. Table 16 indicates the percentages of administrators who responded to each of the items.

TABLE 16

USES OF INFORMATION THAT WAS LOCATED

Description of Use	Percent of Participants Selecting This Use
Wrote A Report	48%
Incorporated into A Larger Communication	52%
Prepared a Speech or Presentation	43%
Passed it Along to Others	86%
Prepared an Agenda	38%
Prepared a briefing school board	33%

It is interesting that almost half the administrators prepared reports since on the preliminary survey (cf. page seven) they did not indicate this as a primary purpose for needing information. Thus, we can infer that many of the administrators have found a new use for ERIC. Indeed, several administrators shared their reports with us. The superintendent of Lawrence utilized ERIC information to prepare his annual message to teachers. The superintendent of Lunenburg, in a conversation with the information searchers, indicated that the data retrieved on class size had been used "on the town hall floor" to increase appropriations.

Information utilized and developed through a practicum such as this should also evidence new products: e.g., new information for future dissemination and utilization in the districts. This occurred in several instances cited by the administrators. The project director of a collaborative cited use of the information in preparing a proposal for gifted students that was later funded by Title IV-C. The superintendent of Woburn prepared a report on declining enrollment that was addressed to his colleagues at the annual conference for superintendents. His presentation contained many references to the literature he had obtained through SDI and his paper in turn was entered into the exchange system so that other administrators could obtain it and read it. A case study in another urban area was prepared using background information from the literature on declining enrollment. This was edited and finalized and entered into the ERIC system for further dissemination. Many such examples were cited by the participants on questions ten and fourteen.

The evaluation established that the information very often was used by other than the direct participants since the administrators served in the role of "gatekeepers." The administrator in his role as a communicator passed on information on a personal basis to others in his community. These administrators were in key positions to reach many other administrators through professional associations and networks. Eighty-six percent reported that they did so.

The administrators were asked to indicate an approximate number of individuals who received the information from them. The range on question ten was large: from 5 individuals to four hundred. The average across all respondents was sixty-seven people. One of the options on question number six also asked if the information enabled them to provide information or advice to others. Using the three-point scale described earlier (3 = high frequency), a mean of 2.44 was obtained. No-one responded rarely (1) on this scaled question. One administrator wrote in that this was the most useful feature of the service for him.

According to the returns on the final questionnaire, over 1,200 individuals, including the primary participants, made use of the output derived from the profiles in one way or another. Wolters and Brown[8] also found a heavy "secondary" use and indicated that it is not unreasonable "to assume that a modest central processing center with dedicated hardware can provide current awareness to as many as ten thousand Canadian scientists by searching eight to ten major data bases."

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[8]Peter Wolters and Jack Brown, "CAN/SDI System: User Reaction to a Computerized Information System for Canadian Scientists and Technologists," Special Libraries (October, 1969), p. 22.

Objective Four: Given awareness of the available SDI services for the school year following the practicum, sixty percent of the administrators will recommend that their colleagues utilize this service. This will be apparent by comparing the referrals on the preliminary questionnaire with those on the final questionnaire and will evidence attitudinal commitment to the usefulness of the literature in journal or report formats.

On the preliminary questionnaire, three participants volunteered the names of three individuals (i.e., one on each of the three questionnaires). At the end of the practicum, the final questionnaire accumulated a total of thirty-two names recommended; thus the final questionnaire obtained ten times more than the number of recommendations initially. One individual indicated he was doing a thorough job and that his subordinates "already receive all materials" that he had channeled to them. Another individual stated that he preferred a "central operation; it is more efficient for our staff." He wished to remain as the focal point for the information flow into the school district. Still a third individual, a high school principal, asked that every department chairperson be eligible for the service. Since he did not name them or count them on the questionnaire, these individuals have not been counted in the above total of thirty-two.

Objective Five: By the end of the practicum, sixty percent of the administrators will indicate that they are willing to continue the SDI service using local funds and will purchase a subscription to the SDI service for the school year following the practicum. This indicates the use the administrator expects to make of the service in his/her local district and his/her willingness to sustain (institutionalize) the service for a future period of time.

Institutionalization

The ultimate test of this service will be through the exchange economy model, as opposed to a grants economy or "free" service, whereby the administrator allocates a portion of his local information budget or library budget to this type of service. The ultimate utility of the service is based upon the administrator's overall judgment of its value and the ability of the SDI service to satisfy the user's information needs.

Several items on the questionnaire were written to obtain answers to the following questions:

(a) What did the user consider to be advantages of the system as opposed to disadvantages

(b) What impact did it have on his usage of the ERIC literature?

(c) Would he be interested in subscribing to a permanent SDI service for current awareness purposes?

(d) Would he recommend other individuals in his school system who might utilize the SDI service?

Given favorable responses to these questions, it was conjectured that continuation of the SDI service in the school districts would be highly likely.

Administrators were asked if they desired to have the SDI service continued. Eighty-six percent indicated that they would wish to subscribe to a permanent current awareness service. Four individuals indicated that they were "uncertain" and three of these noted that it would depend on available funding. As a check on this question, number twelve, question number 16 also included a sub-item to be rated on the incremental scale. Table 17 indicates responses to this query.

Using the scale described, please rate the incremental value to you of a monthly mailed SDI announcement service to help keep you informed of current documents at $85.00 per year.

TABLE 17

INCREMENTAL VALUE IF THE
SDI SERVICE WERE TO COST $85.00 /Year

	10%	20%	50%	70%	100%	150%	200%
Individuals Responding in Per Cents	0	9%	9 %	27%	27%	18%	9%

To date, three of the previous non-subscribers have elected to subscribe to the information services SDI program for the coming school year. One previous non-subscriber has taken out a subscription to Resources in Education that he did not have before.

Thus, it can be concluded that the majority of participants considered that their profile was worth $85.00 per year. The mean in terms of percentage was 89%. By way of contrast, participants were asked if they could use a "research assistant who spends one half day per month gathering reading materials for you at MEC." The mean average for all participants responding was only 83% by comparison. It appears that the participants slightly favored the SDI service over a research assistant. Furthermore, the cost of a research assistant would be considerably more than the SDI computerized service. Therefore, it can be concluded that the SDI service is cost-effective when compared with an alternative information retrieval activity. The evaluation of this objective not only collected responses concerning the general interest in a regular service but also the reaction to the likely subscription rate for a cost-recovery service.

This service is cost-effective in still another way: the incredible federal investment in ERIC over the years could be more fully realized as the information service begins to impact on the local public schools in terms of curriculum, programs, and "innovations."

Self-sustaining services, charging the user a fee for the actual information delivered, have been a practice of regional information services in education over the years. This strategy of entering the exchange economy as opposed to the grants economy has also furnished an incentive for continuous improvement of the quality of service. It has been concluded in this practicum that support from the user will at least sustain the delivery of SDI services.

The fact that the administrators perceived advantages to this SDI service also leads to institutionalization. The main advantages noted on question number seven are listed in Table 18 in rank order.

TABLE 18

RANK ORDERING OF ADVANTAGES

Rank	Advantage
1	The service is time-saving; i.e., it reduces the time spent searching the literature by other methods
2	The service provides references I might otherwise not locate
3	The service is convenient; i.e., it obviates the need for copying out references from journals or indexes by hand
4	The service speeds up accumulation of information

One administrator wrote in under advantages: "there are good people to help you." Thus the computer is seen as a "live" terminal with individuals who will respond to requests with information and good relationships with the staff are maintained. Another administrator wrote in that the service was "impersonal." The tendency of the staff is to work with those who are most inquisitive about the information resources. An improvement suggested would be to aim for more personalized contact with the administrators.

Since the service was seen as valuable, the administrators will continue the information service through the coming school year. Individual profiles functioned quite well and feedback

revealed modifications and adjustments to the profiles. By continuously screening published documents, through monthly updates of the magnetic tapes, SDI systems provided each user with a constant stream of up-to-date information. Thus, the SDI system caused the individual to further articulate--if only for himself--his rationale for organizing information and he defined and described his information needs within the system. This was performed through the initial interest profile and the modifications and feedback that were made to adjust the profile. Modifications can improve the profiles through the coming year as well with the ultimate goal of reaching a 75% "hit" ratio.

The multiplier effect, with the administrator serving as gatekeeper, also will lead to institutionalization. The information staff made multiple copies of specialized newsnotes, resource guides and brief ERIC papers available to the administrators to share with district personnel. Through this sharing and exchange of information, the spread at the awareness level was viewed as the catalytic agent to see that the resources were applied, or at least evaluated so that decisions not to adopt a specific practice could be made. The administrator who exchanges current information will be more likely to assist others in notification of new information resources. With a growing network of information users, the school system is more apt to choose to continue the services. Administrators recommended information resources to many of their colleagues during the practicum year thus expanding the network of information users. Credibility for the information service

grew throughout the year and the SDI information services were disseminated throughout the State. The Association for Supervision and Curriculum Development described the services in one of its major newsletters going out to all members. Informative materials from this service and announcements of the SDI program were also available at the Annual ASCD conference and the Annual AASA*conference in Atlanta, Georgia.

The SDI service will become part of the comprehensive information services program available to school systems and educational agencies on a subscription basis through the Merrimack Education Center. In addition to searches in depth (retrospective searches covering back years of the ERIC data base) the comprehensive program provides a wide range of useful publications including:

- quarterly newsletters
- annotated bibliographies
- resource guides
- curriculum indexes

An attractive feature of the SDI service is that it costs only slightly more than a retrospective search and that it runs for a full year instead of a one-time search of the previous literature. As an additional attractive feature, the SDI service costs less than the comprehensive ERIC subscription service that had previously been instituted with a rate of $185.00 per year.

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*AASA--American Association of School Administrators

Objective Six: At the conclusion of the SDI practicum, sixty percent of the administrators will report a minimum of three new applications of the information retrieved to their current work activities, as measured by reports of program decisions or policy modifications on the final questionnaire.

Knowledge resources available through ERIC and ERIC-like systems are of a general type aimed at providing assistance in confronting a range of issues (policy, curriculum, etc.) as well as targeted type (interpretive studies, etc.). The kinds of documents requested by the administrators reflect the levels of use as described in Chapter III of this report. Levels of use range from awareness through adoption and meet the following needs:

(a) better understanding of the issues;

(b) identifying or locating new sources;

(c) identifying alternative approaches; etc.

The direct relationship that was conjectured to exist between amount of research information provided to the schools and project applications was realized. Table 19 depicts the number of new projects, programs, or teaching techniques resulting from the practicum (question fourteen).

TABLE 19

NUMBER OF NEW PROJECTS, PROGRAMS,
OR TEACHING TECHNIQUES RESULTING FROM PRACTICUM

Response Category for Number of Programs	Percent	
no response	14%	
one - three	14%	
four - six	22%	71%
seven - nine	27%	
more than nine	22%	

The range of items checked on question fourteen was from one to thirteen with a mean of 7.21. From Table 19 it can be seen that seventy-one percent of the administrators reported more than three program applications. Thus, the objective can be considered as achieved.

Question number six can also be interpreted as providing information relative to the number of linkage outcomes participants believed were derived from the information services provided. Table 20 illustrates the responses to question number six as collected on a three-point scale (1=low or rarely; and three being most frequent/high.).

CRUSK has offered a definition of utilization that proved helpful for the practicum. In coding for utilization scores, CRUSK recommended attention to instances of use where the decision maker received relevant information (i.e., SDI) and reported efforts to put that knowledge into use (i.e., by utilization in practice) even if this effort to produce an impact was unsuccessful. This "utilization of knowledge...occurred when the respondent was familiar with relevant research and gave serious consideration to and attempted to apply that knowledge to some policy."[9] If the innovativeness of school systems

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[9]Nathan Caplan, et. al., p. xii.

TABLE 20

LINKAGE OUTCOMES DERIVED FROM SDI SERVICE

LINKAGE OUTCOME	MEAN
Increased my general knowledge of the field of education	2.3
Gave me new concepts for approaching my work	2.14
Helped me solve a problem related to work	2.05
Provided or led me to, new material	2.32
Increased my awareness of new educational practices	2.23
Helped me identify new sources of assistance for improving my work-related activities	2.32
Made me more satisfied with something I was already doing	1.95
Made me more critical with something that I had been doing	1.83
Gave me a favorable attitude toward something I might do differently	1.89
Caused me to reject implementing a specific innovation	1.52
Helped me make a decision concerning a new educational practice/program	2.0
Encouraged me to try a new educational practice	2.06
Led me to adopt a new educational practice on a more or less permanent basis	1.94
Provided assurance that I was on the right track in something I developed	2.16
Enabled me to provide information or advice to others	2.48

is associated with the number of information sources used, as Klingenberg has indicated, then administrators who desire to be on the cutting edge of educational change must constantly maintain contact with a variety of educational information sources.

Based upon the concept of "levels of use," one would expect that there would be different degrees of utilization by the different participants. On the final questionnaire, question number fourteen, the administrators were asked to determine if they used informational resources provided through SDI for program planning, curriculum development and management tasks. Four levels of utilization were selected based upon the research done at CRUSK. The administrators' responses were then categorized according to these four levels of knowledge use.

TABLE 21
LEVELS OF UTILIZATION

Utilization Level	Criteria for Assigning Utilization Score
One	5-10 Instances of Use with good supporting evidence
Two	2-4 Instances of Use with Good Supporting evidence
Three	1-7 Instances of use with meager supporting evidence
Four	No instances of use reported

Utilizing the criteria developed at CRUSK, the responses of the administrators were categorized and are presented here in Table 22.

TABLE 22

EXTENT OF KNOWLEDGE UTILIZATION

Utilization Level	Number of Respondents Meeting Criterion	Per Cent of Respondents
ONE	10	43%
TWO	4	17%
THREE	5	22%
FOUR	3	13%

Five respondents did not fill out this page of the questionnaire; however, they did check the boxes for question number six. Perhaps they interpreted this question as duplicative even though it was included for a different purpose in the practicum questionnaire. These respondents, therefore, fell into the lowest level of utilization since the items in question six are primarily at the awareness level.

Given the fact that awareness is the easiest level to impact upon, it might be expected that an increase in knowledge and awareness of information would be the greatest change described by the administrators. By obtaining an aggregate mean for all awareness items listed in the Table of linkage outcomes, this assumption is tested. Table 23 illustrates linkage outcomes at the awareness level. Table 24 evidences linkage outcomes at an attitudinal or concept level, and Table 25 lists linkage outcomes at an action of application level. It has been assumed that is is easy to create awareness and it is more difficult to change a person's ideas, attitudes, and actions. Grouping these linkage outcomes together tends to confirm this belief even though the aggregate means are not greatly different.

TABLE 23

AWARENESS LEVEL LINKAGE OUTCOMES

Linkage Outcome	Mean
Increased my general knowledge	2.3
Provided or led me to new material	2.32
Increased my awareness of new practices	2.23
Helped me identify new sources of assistance	2.32
Aggregate Mean	2.29

It has been assumed that it is more difficult to change a person's ideas or beliefs and attitudes. Grouping these linkage outcomes together produces the results as shown in Table 24.

TABLE 24

LINKAGE OUTCOMES -- ATTITUDES

Linkage Outcome	Mean
Gave me new concepts	2.14
Made me more satisfied	1.95
Made me more critical	1.83
Gave me a favorable attitude	1.89
Caused me to reject something	1.52
Provided assurance I was on the right track	2.16
Aggregate Mean	1.92

The aggregate mean for the changed attitudes was lower than for the awareness behaviors. This confirms what Paisley and Havelock have indicated; attitude and behavior changes are more difficult to come by and take a longer time period. The third grouping of linkage outcomes, presented in Table 25, describes actual applications and implementations of the ideas or concepts gained.

TABLE 25

APPLICATIONS OF IDEAS AND CONCEPTS

Linkage Outcomes	Mean
Helped me solve a problem	2.05
Helped me make a decision	2.0
Encouraged me to try a new educational practice	2.06
Led me to adopt a new educational practice on a more or less permanent basis	1.94
Enabled me to provide information to others	2.48
Aggregate Mean	2.10

This aggregate mean is somewhat lower than the aggregate mean for Table 23, awareness level outcomes. As Klausmeier has indicated, and as reported in Chapter III of this practicum report, it takes up to three years to actually implement innovations. A continuous, monthly update of literature, over a two or three-year time span, would be very likely to impact upon the administrator's adoption of innovations if this initial impact of the SDI on linkage outcomes is a realistic picture.

Question number fourteen on the final questionnaire asked administrators to relate the areas in which they actually applied the information. Table 26 illustrates percentages for each purpose identified by question 14.

TABLE 26

APPLICATIONS OF THE INFORMATION IN SPECIFIC AREAS

Area/Purpose	Percentage of Total Responding
Appraising teacher/administrator effectiveness	22%
Providing inservice training	56%
Providing pupil personnel service	22%
Personnel matters	6%
Consulting or advising others	39%
Determining educational needs	56%
Establishing goals and objectives	6%
Evaluating program outcomes	28%
Program planning	56%
Management concerns	72%
Policy formation	44%
Practice improvement	11%
Teaching or instruction	44%
Solving a problem	61%
Identifying alternative approaches	28%
Identifying new programs, methods, materials, or products	44%

CHAPTER VI
SUMMARY

This practicum was based upon the assumption that the actions and behaviors of school administrators have a sginificant influence on the decision making practices in school systems. This practicum showed that school administrators can and will make use of sources of information and that they perceive such utilization as leading to improvements in educational practice. This practicum, which offered a computerized SDI system, provided the administrator with a tool for managing the exploding volume of educational information. The practicum affirmed that supplying relevant information to persons needing it can be accomplished effectively by using the computer terminal.

After one year, the SDI system has succeeded in two important missions: (1) making available the significant literature in the field of education; and (2) bringing the ERIC knowledge base to the attention of administrators so that practice might catch up with its own best exemplars. Enough data and experience have been accumulated to show that the SDI system works. The majority of the participants believed that the SDI practicum was responsible for local applications. This practicum report described findings on some of the processes of information utilization in schools today. The results described in this practicum report may be useful for planning new information systems, or for improving current procedures in use by information centers.

To date, the operational SDI service, focusing on the dissemination of information, has been developed, refined and implemented as a self-sustaining service. The results of user evaluations indicated positive

reactions to the service. Results, based on a sample of thirty-five administrators who were assessed by specially constructed questionnaires, supported the belief that information could be applied by administrators. Although the audience that responded was keenly aware of the value of using information, it appears that many educators lack the time to conduct a literature search in order to deal with practical problems in the schools. The saving of time by using computer-assisted retrieval has demonstrated the practical impact of this practicum.

In order for persons to use and support an information system they must first understand it. This practicum indicated that information-seeking behavior can increase if the school districts are served by a linking agency that disseminates quantities of information. Additionally, the professional reading of the administrator plays an important role in keeping other practitioners, his colleagues and informal network of peers, informed in an indirect way. The information center should take great care to inform administrators of the features of an SDI service and their advantages and disadvantages. The response in volume by clients to date indicates that users are willing to try, evaluate and adopt the SDI services for day-to-day needs. Feedback from the administrator as he uses the information indicates how information is utilized for problem solving, for decision making, and for action programs. This feedback is helpful in modifying the profiles and keeping administrators informed of extremely relevant materials.

While the delivery system itself is innovative, it is the SDI system role in the utilization process that is of critical significance. Through the SDI alerting service, an information center can continuously

bring the administrator's attention to a range of programs or practice options that are potential solutions to specific practitioner needs. And the resulting practices impact upon the school environment.

It is apparent that the practicum achieved its objectives implementing an SDI service based on the computer searching of ERIC and thereby introduced a group of administrators to a computerized service, in some cases for the first time. The administrators also greatly appreciated personal assistance from the information searcher. The SDI service was successful because the administrators requested information. Thus, the SDI practicum stimulated a demand for new knowledge. Information is a resource--merely a tool, not an end in itself. Therefore, it must be provided in response to actual user requirements.

The supplying of relevant information to administrators desiring it, from the bulk of information available, can be accomplished economically by machine. The computerized SDI service provided access to the latest references and provided the backup journal and report source literature in a timely and cost-effective manner. In the exchange economy model, whereby the users pay a fee in exchange for services, this also provides an appraisal of the service which, because it is financed by the client, can survive only if the service remains responsive to user requirements.

Computerized information systems can complement the administrator's prior modes of informal access to knowledge. There is no reason why administrators should have to rely upon their prior experiences alone when the hard experiences of others can be at their disposal. This highlights the role of information systems in education. If practitioners are to have the opportunity to review, select and implement outcomes for their

own schools, then they must be aware that such outcomes exist and that these outcomes are accessible to them in their local districts. SDI meets the criteria of timeliness, speed, accuracy, and local availability at a reasonable cost. The Merrimack Education Center has concentrated on the establishment of an SDI program to meet the needs of local educators via access to ERIC and ERIC-like data bases. Thus, SDI is an efficient and effective addition to the comprehensive services offered by the Center.

GLOSSARY

CIJE	Current Index to Journals in Education
DAG	Dissemination Analysis Group appointed by Dissemination Policy Council in DHEW Education Division
DHEW	U.S. Department of Health, Education and Welfare
DRG	Dissemination Resources Group established by NIE to study dissemination
EDCO	Educational Collaborative
ERIC	Educational Resources Information Center funded by NIE
ESEA	Elementary and Secondary Education Act of 1965
IPOD	Interstate Project on Dissemination conducted by NIE
LEA	Local Education Agency (local school district)
LISA	Library Information Science Abstracts
MEC	Merrimack Education Center
NIE	National Institute of Education in DHEW Education Division
NTIS	National Technical Information Service
RDU	Research and Development Utilization Program -- an NIE funded effort experimenting with better ways to identify school problems and supply research-based products to solve them
RDX	Research and Development Exchange -- NIE-funded effort through regional laboratories and university centers
RIE	Resources in Education -- ERIC announcement journal
SDI	Selective Dissemination of Information
SEA	State Education Agency
USOE	U.S. Office of Education in DHEW Education Division

BIBLIOGRAPHY

Altman, T. A Study of the Dissemination of Your Chance to Live. Washington, D.C.: DCPA, 1975.

Brickley, Richard, and Trohoski, Carolyn. The Evaluation of Educational Information Centers. Princeton, New Jersey: ERIC Clearinghouse on Tests, Measurement, and Evaluation, ED 099 424, 1974.

Brittain, John. Information and Its Uses. New York: John Wiley and Sons, 1970.

Burton, Hilary. "Personal Information Systems." Special Libraries 64 (January, 1973): 7-11, EJ 071 972.

Burton, Hilary. "Techniques for Educating SDI Users." Special Libraries 66 (May-June, 1975): 252-255, EJ 114 604.

Butler, Matilda, and Paisley, William. Educational Knowledge Dissemination and Utilization. San Francisco, California: Far West Laboratory for Educational R&D, 1978.

Brown, Jack. "The CAN/SDI Project: The SDI Program of Canada's National Science Library." Special Libraries, 60 (October, 1969): 102-115.

Campbell, Roald. "The Role of School Study Councils and Local School Districts in the Dissemination and Implementation of Educational Research." Dissemination and Implementation. Edited by Keith Goldhammer and Stanley Elam. Bloomington, Indiana: Phi Delta Kappa, Inc., 1962.

Caplan, Nathan. The Use of Social Science Knowledge in Policy Decisions at the National Level. Ann Arbor, Michigan: University of Michigan, 1975.

Carter, Launor. From Research to Development to Use. Report #SP-2332. Santa Monica, California: System Development Corporation, ED 026 741, 1966.

Chorness, Maury and C. Rittenhouse. Decision Processes and Information Needs in Education: A Field Survey. Berkeley, California: Far West Laboratory for Educational R&D, ED 026 748, 1969.

Culbertson, Jack. "A Nationwide Training System for Linking Agents in Education." Linking Processes in Educational Improvement. Edited by Nicholas Nash and Jack Culbertson. Columbus, Ohio: University Council for Educational Administration, 1977.

Demeter, Lee. "Accelerating the Local Use of Improved Educational Practices in School Systems." Unpublished Ed.D. dissertation, Columbia University, 1951.

Doughty, B. M. "Some Factors Affecting Innovations as Identified in Educational Literature and as Perceived by Selected Teachers." Unpublished Ed.D. dissertation, University of Alabama, 1966.

Drott, M. Carl. "Models and Measurements of User Information Needs in the Selection of Systems for the SDI." Unpublished Ed.D. dissertation, University of Michigan, 1973.

Emrick, John and Peterson, Susan. A Synthesis of Findings Across Five Recent Studies in Educational Dissemination and Change. San Francisco, California: Far West Laboratory for Educational R&D, 1978.

ERIC Document Reproduction Service, "Identifier Clean-up Program," ERIC Data Base User Interchange (April, 1977): 6.

Far West Laboratory for Educational R&D. Educational R&D Information System Requirements: A Task Force Report. Berkeley, California: Far West Laboratory, ED 022 441, 1968.

Fletcher, Gerry. Dissemination Analysis Group (DAG) Report to the Dissemination Policy Council of the DHEW Education Division. Washington, D.C., January, 1977. Washington, D.C.: DHEW Education Division, [1977].

Gluchowicz, Zofia. Selective Dissemination of Information and Retrospective Searches: Computer Based Information Services from the Royal Institute of Technology. Stockholm, Sweden: Royal Institute of Technology, ED 082 796, 1973.

Goetz, Francis. "Innovation and the Public Elementary School Principal." Unpublished Ed.D. dissertation, Wayne State University, 1965.

Guba, Egon. "Development, Diffusion and Evaluation." Knowledge Production and Utilization in Educational Administration. Edited by T. Eidell. Columbus, Ohio: University Council of Educational Administration, 1968.

Havelock, Mary and Havelock, Ronald. The National Survey: The Substance and the Process. Volume I of Educational Innovation in the United States. Ann Arbor, Michigan: Michigan University Center for Research on Utilization of Scientific Knowledge (CRUSK), 1973.

Havelock, Ronald G. A Training Model for Change Agents in State Education Agencies. Ann Arbor, Michigan: University of Michigan Center for Research on Utilization of Scientific Knowledge (CRUSK), 1970.

Havelock, Ronald G. Recommendations for the Dissemination Program of the National Institute of Education. Washington, D.C.: National Institute of Education, 1972.

Hood, Paul, Mick, Colin, and Katter, R. A Summary Report. Volume II of The Educational Information Market Study. Berkeley, California: Far West Laboratory for Educational R&D, ED 135 411, 1976.

Johnson, Jana. Increasing the Use of Promising Practices Information by Local Education Agencies. Report to the National Institute of Education, Washington, D.C. Los Angeles, California: Contemporary Research Inc., 1974.

Katagiri, George. Oregon's Pilot State Dissemination Program. Salem, Oregon: Oregon State Department of Education, 1973.

Klausmeier, Herb. IGE Implementation Guide. Madison, Wisconsin: University of Wisconsin, 1972.

Klingenberg, Allen. "A Study of Selected Administrative Behaviors Among Administrators from Innovative and Non-Innovative Public School Districts." Unpublished Ed.D. dissertation, Michigan State University, 1966.

Lancaster, Wilfrid. "Let the Computer Select Your Reading List." Datamation, Vol. 16 (Fall, 1970): 91.

Lavin, Richard. Developing A Local Linking Institution in Education. Chelmsford, Massachusetts: Merrimack Education Center, 1971.

Leggate, Peter. The BA Previews Project: The Development and Evaluation of A Mechanized SDI Service for Biologists. Final Report # 5140. London, England: Office for Scientific and Technical Information, ED 095 865, 1973.

Likert, Rensis. The Human Organization: Its Management and Value. New York: McGraw Hill, 1967.

Lindeman, John. Some Aspects of Educational Research and Development in the United States. Report to the Organization of Economic Cooperation and Development, Washington, D.C. 1969.

McCracken, J. "Utilization of Information by State Supervisory Personnel." Unpublished Ph.D. dissertation, Ohio State University, ED 039 369, 1970.

Merrimack Education Center. Making Innovation Work. Report to the Massachusetts Department of Education, Bureau of Curriculum and Instruction, Title IV-C, Boston, Massachusetts, August, 1977. Chelmsford, Massachusetts: Merrimack Education Center, 1977.

Miles, Matthew. Innovation in Education. New York: Columbia University Teachers College, 1964.

National Aeronautics and Space Administration (NASA). Implementation Test and Evaluation of an SDI System for NASA Scientific and Technical Information. Final Report. Yorktown Heights, New York: IBM Corporation, 1966.

National Institute of Education. Program Plan for FY 78. Report prepared for the Dissemination and Resource Group (DRG). Washington, D.C.: National Institute of Education, 1976.

National Science Foundation. Characteristics of Scientific Journals. NSF Report #64-20. Washington, D.C.: The National Science Foundation, 1964.

Newfield, John. "What are the Information Demands of Curriculum Supervisors?" Educational Leadership (March, 1977): 453-547.

Paisley, William. "Improving A Field Based ERIC-Like Information System." Journal of the American Society for Information Science 22 (November-December, 1971): 399-408.

Paisley, William and Matilda Paisley. Communication for Change in Education: Educational Linkage Programs in the 1970's. Berkeley, California: Stanford University, 1975.

Paul, Douglas. "The Diffusion of an Innovation through Interorganizational Linkages: A Comparative Case Study." Technical Report Number 308. Madison, Wisconsin: The University of Wisconsin, 1974.

Rittenhouse, Carl and Chorness, Maury. A Survey of the Decision Processes and Related Informational Requirements for Educational Planning and Information. Berkeley, California: Far West Laboratory for Educational R&D, 1969.

Ross, Paul. "The Establishment of an Educational Information Program and an Assessment of Its Utilization in Local School Districts." Unpublished Ed.D. dissertation, University of Massachusetts, 1975.

Royal Institute of Technology. Progress Report of Computerized R&D Services. Stockholm, Sweden. October, 1972. ERIC ED 072 833.

Schneider, John. Selective Dissemination and Indexing of Scientific Information. Science; 173; pp. 300-308. July, 1971.

Spivey, Richard et. al. Interstate Project on Dissemination Report and Recommendations. IPOD Report. Report to the National Institute of Education. Washington, D.C.: National Institute of Education, 1976.

Thayer, Lee. Toward a Reconceptualization of Knowledge Utilization in Education. Volume I. Final Report. Iowa City, Iowa: Center for Advanced Study of Communication, University of Iowa, 1973.

Toffler, Alwin. Future Shock. New York: Random House, 1970.

Wolf, William and Fiorino, A. A Study of Educational Knowledge Diffusion and Utilization. Amherst, Massachusetts: University of Massachusetts. ED 061 772, 1972.

Wolters, Peter and Brown, Jack. CAN/SDI System: User Reaction to A Computerized Information System for Canadian Scientists and Technologists." Canadian Library Journal 60 (October, 1972): 20-27.

APPENDIX A

PRELIMINARY QUESTIONNAIRE

PRELIMINARY QUESTIONNAIRE

SELECTIVE DISSEMINATION OF INFORMATION

USER PROFILE

1. NAME_____

2. ADDRESS_____

3. SCHOOL DISTRICT_____

4. TELEPHONE_____

5. Primary area of your responsibility:

_____Principal/Building Administrator
_____Central Office Administrator: Position_____
_____Educational Collaborative Staff: Position_____
_____Curriculum Specialist
_____Other: Position_____

6. How many magazines/journals do you read in a typical month related to the field of education?

_____0 _____1 - 5 _____6 - 10 _____over 10

7. What are the sources of educational journals and related materials that you read? List by letter the two sources most frequently used: _____ _____

(a) Personal Subscription
(b) Organization Subscription
(c) Association Membership
(d) Professional Library in your district
(e) School Library or Staff Center
(f) Public Library
(g) College/University Library
(h) Massachusetts Department of Education Regional Office
(i) Information Service Center
(j) Collaborative Collection

8. For what purposes do you primarily seek information in your work? Choose three.

_____Better understanding of the issues
_____Program development
_____Staff planning/development
_____Program planning and budgeting
_____Proposal development
_____Curriculum development
_____Program evaluation
_____Staff evaluation
_____Personal/professional development
_____College or graduate school course work
_____Other_____

9. Please check the three most frequent individual sources of information used for solving problems in your work:

_____ Subordinates in your organization
_____ Fellow workers (colleagues) in your organization
_____ Superiors in your organization
_____ Colleagues in other organizations
_____ Experts or authorities on the subject
_____ Information resources (information specialists; libraries)
_____ Other_____

10. How important do you consider it to keep abreast of new work published in education?

_____Essential _____Valuable _____Of minor importance

11. Are you reasonably satisfied that you are well informed on new work in the field of education?

1	2	3	4	5
not at all satisfied				extremely satisfied

12. Please indicate the degree of difficulty each of the following causes you in keeping yourself aware of current information.

	Negligible Difficulty					Great Difficulty
Finding out which specific, newly-published items (periodical articles, etc.), are relevant to your interests.	1	2	3	4	5	6
Obtaining material (either to scan for relevant items or to read and assimilate).	1	2	3	4	5	5
Finding time to read and assimilate the materials when obtained.	1	2	3	4	5	6
Other_____	1	2	3	4	5	6
_____						

13. When faced with a new problem or in the course of implementing a new project/program, do you attempt to discover what information has been published on the subject?

_____Rarely _____Seldom _____Often _____Frequently

14. Do you consider that articles of value to you appear in periodicals other than those which you see regularly?

_____Yes _____No

15. If yes, do you consider the number of such articles to be:

_____Large _____Moderate _____Small

16. How much time do you consider you spend scanning or reading published information

(Estimate in hours per week)

	Hours/Week
Journals (complete issues	____
Specific Articles	____
Newsletters, Reporting Services	____
State of the Art Reports	____
Specific Research Reports	____
Statistical Reports	____
Bibliographies, Indexes, Abstracts	____
Books	____
Information Packages specifically tailored to your needs	____

17. Given the listing of journals below, please place a check in the box which most appropriately represents your reading habits.

	Read thoroughly	Read relevant articles only	Scan Table of Contents but do not read	Do not subscribe; not available to me
Administrator's Notebook				
American Education Research Journal				
American School Board Journal				
California Journal of Teacher Education				
Educational Leadership				
Educational Review				
Educational Research Quarterly				
Elementary School Journal				
EPIE Institute				
Forum				
Harvard Educational Review				
IAR Research Bulletin				
Journal of Educational Administration				
Journal of Educational Research				
Journal of Teacher Education				
Kappa Delta Pi Record				
NASSP Bulletin				
National Elementary Principal				
Peabody Journal of Education				
Phi Delta Kappan				
Review of Educational Research				
Saturday Review				
School Business Affairs				
Teachers College Record				
Theory Into Practice				
Thrust for Educational Leadership				
Other_____				
Other_____				

18. What percent of your reading time is devoted to current materials that help to keep you abreast of your field? (This might include current journal articles, new books, working papers, etc.)

_____0 to 20% _____20 to 40% _____40 to 60% _____60 to 80%

_____over 80%

19. Suppose that next month you were able to find twice the number of current documents than you read last month. How much time would you spend reading?

_____about twice as much time as last month
_____more time than last month
_____about the same time as last month
_____less time than last month

20. How many of the current documents would you read?

_____All
_____More than last month
_____About the same number as last month
_____Fewer than last month

21. The list below suggests some of the resources which can be used for managing schools. Indicate the degree to which your system has used these resources in the past year.

	Very frequently	Frequently	Occasionally	Infrequently	Not available
Research and evaluation office or staff					
Inservice training					
Library facilities					
Media centers					
Curriculum supervisors					
ERIC					
USOE supported labs or centers					
ESEA Title I projects or services IV-B or IV-C					
ESEA Title IV projects or services					
State education departments					
Foundations or private programs					
Universities and colleges					
Regional education centers					

22. When confronted with key educational decisions (curriculum design, policy planning, etc.) how often do you do a review of the literature on which to make that decision?

Not very often 1 2 3 4 5 6 Very often

23. Computerized services: Have you used the ERIC computer-assisted search services of IES/NEC during the last six months?

_____ Yes _____ No

24. Are you familiar with a computer printout?

_____ Yes _____ No

25. If you do not use the computer search services, is you non-use attributable to:

_____ No subscription to it by organization
_____ Inaccessibility
_____ Do not like format of indexes/computer searches
_____ Do not consider coverage adequate for my subject
_____ Do not find any need for abstract services
_____ Tend to rely on "invisible colleges;" i.e., personel contacts with co-workers in own field
_____ Other_____

26. Would you like to suggest any other individuals we ought to contact?

_____
_____
_____

27. Are there any ideas you haven't had an opportunity to share with us that you think should be considered in our study and which you would like to tell us about?

_____
_____
_____

APPENDIX B

TITLE IV-C QUESTIONNAIRE

MERRIMACK EDUCATION CENTER

TITLE III ESEA EVALUATION

Interview Questionnaire

The purpose of this interview is to get your (Project Director) views on how the project is going up to now and perhaps to explore aspects of project management which you feel might be improved in the short time remaining between now and June.

There are three objectives to these field visits we are making now. The first, and perhaps most important, is to determine ways in which we might help out with the concluding phases of the project, especially with issues of long-term maintenance and dissemination. Secondly, we want to get some information from each of the projects which we can use later in the workshop sessions we have remaining. The third is to collect information for the State on the problems and progress of this last year of Title III which will help the Title III staff do a better job next year.

Do you have any questions at this point before we begin?

1. Would you describe your project to me?

2. How is your project going at this point? (Interviewer will need to ask leading questions to move response from yes/no)

3.a)Who are the people that your project serves directly?

3.b)Are there others who also receive benefits? Who are they and what benefits do they receive?

4. Given the choices on this card, how would you describe your project?

a) ____ It is a very new and unique concept as far as you know.

b) ____ It is new at least as far as your region or district is concerned.

c) ____ It is new at least for the particular client group you are working with.

d) ____ It is not really innovative at all.

5. If you consider your project innovative, will you explain what you view as the most innovative aspects? (After the initial response ask--Can you think of any other innovative aspects of your project?)

6. Do you see your project as an example of problem solving? Can you explain what you mean by this?

7.a)How would you define your role in the project?

7.b)What percentage of your total time is spent on project duties?

7.c)What sort of work do you perform in addition to this project?

8. There are a number of different terms that various people use to describe the roles they fill on Title III projects, and usually someone defined formally as the "director" fills many of these roles simultaneously or consecutively. I would like to give you a list of the roles and ask you to make a rough guess as to the percentage of your total project time you devote to each of them. (only roles you feel you spend time in)

[Provide interviewee the following list of roles:]

a) What percentage of your time is spent on the following roles: (Note: Do not need to add up to 100%)

____a) manager/administrator of the project

____b) key decision-maker

____c) researcher

____d) trainer-teacher

____e) disseminator

____f) catalyst (someone who incites others to action and to articulate their needs)

____g) consultant (helping others to help themselves)

____h) solution provider (offering explanation and solutions)

____i) solution adapter (someone who takes innovations or innovative ideas developed elsewhere and reshapes them in some way to fit the local scene)

____j) solution implementer

____k) resource linker (ask respondent to indicate what resource he is thinking of)

b) (After examining the percentages of time spent on various roles, ask the project director to give a brief description of what is meant by each of the roles that take up the largest percentage of his/her time)

[Note: If project director spends less then 50% of his/her time on project, then have two people present, i.e., the one who is doing the work.]

9. Timespan and Timeline of Project Stages

We would now like to get some perspective on the major steps or stages in this project, simply from the point of view of when they happened and how long they lasted. In responding here, I would like you to think not just of the activities as specified in your proposal but to look at the project in the larger sense which probably started much further back and will extend into the future, perhaps well beyond this summer. I am going to provide you a chart with 12 possible stages that might have taken place. If you cannot pinpoint or identify some of these for your project, that is quite understandable. Otherwise, try to give a date roughly to the nearest month if possible.

(Refer to Timeline of Project Stages)

10. Have you been able to build relationships with people in key positions? (Those who authorize, unlock doors to funds, clients, etc.?)

a) Who are they?

b) What kind of effort was needed to acquire these relationships?

c) How do you maintain these relationships?

d) Are there any current problems in areas where the relationships could be improved? [If yes, then probe for barriers.]

11. How well have you continued to assess and diagnose needs and problems? Can you explain your answer further?

12. How much effort has gone into assessment and diagnosis? (Use card)

____ none
____ minimal
____ reasonable amount
____ large amount
____ extremely large amount

13. To what extent are you satisfied with the financial support the project has received thus far? (use card)

____money left over (how much?)

____adequate funds

____not enough (how much more would you need to adequately complete your objective?)

14. Do you anticipate acquiring adequate financial resources to continue the project? What kinds of activities did you employ (or contemplate) to meet the need of adequate funding?

15.a)What is the amount of effort and degree of success so far in searching for and acquiring information and/or products and materials for the project? (give card)

APPENDIX C

INVENTORY CHECKLIST OF TOPICS

INTEREST PROFILE

IF YOU ARE PRIMARILY CONCERNED WITH CURRICULUM AND INSTRUCTION, WHICH AREAS CONCERN YOU THE MOST?

___ Alternative Organization for Elementary/Secondary Schools
___ Developing Affective Curriculum
___ Occupational Career Development
___ Consumer Education
___ Bilingual Education
___ Curriculum, Materials, and Aids: Instructional Materials, Curriculum Development, Curriculum Guides, Curriculum Resource Materials, Behavioral Objectives
___ Teachers, Teacher Characteristics and Teaching: Teacher Education, Teaching Methods, Teaching Guides, Teaching Techniques, Teacher Behavior, Inservice Teacher Education, Instruction, Teacher Attitudes
___ Students, Student Characteristics and Learning: Disadvantaged Youth, Academic Achievement, Student Attitudes, Self-Concept, Learning Processes, Student Characteristics
___ Subject Matter of Instruction: Vocational Education, English Instruction, Reading Instruction, Social Studies

SPECIAL EDUCATION

___ Special Education for Older Youth
___ Prevocational, Vocational, Rehabilitation, etc.
___ Serving the Handicapped Child in the Regular Class; Issues and Methods of Mainstreaming; Resource Programs, etc.
___ Early Education of the Handicapped; Early Identification and Assessment
___ De-Institutionalization; Community-Based Programs and Group Homes for the Handicapped
___ Child Abuse; Physical/Emotional Abuse and Child Neglect
___ Educational Assessment: Formal and Informal Testing; Student Evaluation and Diagnosis; Norm and Criterion-Referenced Testing; Achievement or Psychological Evaluation

DIRECTLY RELATED TO STUDENTS (Select any target group)

___ Bilingual Students
___ Poverty Areas; Low-Income
___ Dropouts
___ Human Services (e.g., Medicaid, Social/Psychiatric, etc.)
___ Correctional Education
___ Clinical Nursery School
___ Day Care
___ Early Childhood (birth to age 8)
___ Ethnic Groups; Minorities
___ Gifted
___ Other_____

PERSONNEL RESOURCES

___ Staff Development; Continuing Professional Education
___ Community-School Decisionmaking
___ Supervision of Instruction
___ Community Involvement; Parent Education
___ Student Rights; Due Process

SCHOOL MANAGEMENT CONCERNS

___ Setting Goals and Priorities
___ Needs Assessment
___ Program Review; Analysis of Existing Programs
___ Program Planning and Budgeting Systems
___ Personnel Administration
___ Public Information
___ Governance and Policy
___ Legislation/Legal Services
___ Budgeting; Resource Allocation
___ Educational Planning: Educational Objectives, Educational Programs, Educational Needs, Program Development, Educational Planning, Program Planning, Educational Innovations, Educational Change, Decisionmaking
___ Educational Finance: Financial Support, PPBS, etc.
___ Research, Testing, and Evaluation: Program Evaluation, Educational Research, Research, Evaluation, Models, Comparative Analysis, Surveys, Research Methodology, Testing, Evaluation, Criteria, Evaluation Techniques
___ Areas for Development: New Substantive Content, New Instructional Methods, New Instructional Materials, New Techniques of Selecting and Grouping Students

IF YOUR WORK PRIMARILY CONCERNS SUPPORT PROGRAMS AND SERVICES INDICATE THE AREAS WHERE YOU HAVE MAJOR RESPONSIBILITY.

___ Purchasing
___ Facilities Operation and Maintenance
___ Recruitment/Staffing
___ Transportation
___ Facilities Modification (Planning and Acquisition)
___ Food Services
___ Agency or Interagency; Insurance/Health Programs, etc.

WHAT CURRENT TRENDS/ISSUES OR CONCERNS DO YOU CONSIDER WILL BE IMPORTANT TO YOUR WORK OVER THE NEXT SIX MONTHS?

___ Minimal Competencies; Graduation Requirements
___ Back to Basics
___ Metropolitan
___ Declining School Enrollment
___ Other_____

IF YOUR INTERESTS ARE RELATED TO CURRENT INFORMATION, TRENDS, AND INNOVATIONS IN TECHNIQUES, SELECT ANY OF THE FOLLOWING:

___ Behavior Modification
___ Computer-Assisted Instruction
___ Developmental Tasks
___ Independent Study
___ Motivation
___ Behavioral Objectives
___ Student Contracts
___ Diagnostic Teaching
___ Group Activities
___ Parent Counseling
___ Work-Study

APPENDIX D

SAMPLE INTEREST PROFILES

R. LEMIEUX / PROJECT SHAPE

SCHOOL MANAGEMENT CONCERNS

Goal Setting
Program Planning (PPBS)
Research, Testing, and Evaluation

PERSONNEL/RESOURCES

Staff Development
Teacher Centers

SUPPORT PROGRAMS/SERVICES

CURRICULUM AND INSTRUCTION

Developing Alternative Curriculum
Students/Student Characteristics
Alternative Schools

SPECIAL EDUCATION

STUDENT

Dropouts
Student Rights

TECHNIQUES

Student Constraints

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OTHER

Back to Basics

00 12

INTEREST PROFILE

STEFANI, JOHN

Project SPOKE
37 West Main Street
Norton, MA 02766

Multi-district:
4+ Communities

Telephone:
285-7766

Years in Operation -- Over Eight

Multipurpose Collaborative __x__ Yes

PROGRAM AREAS

- Assessment
- Student Evaluation
- Diagnostic Tests
- Criterion-referenced Tests

DESCRIPTORS: JOB/POSITION

- Administrator

TECHNIQUES/ACTIVITIES

- Behavior Modification
- Computer-Assisted Instr.
- Contracts
- Developmental Tasks
- Diagnostic Teaching
- Group Activities
- Information Retrieval
- Parent Counseling
- Task Analysis
- Work-Study
- PPBS
- Behavioral Objectives
- Educational Diagnosis
- Field/Community Rela.
- Educational Diagnosis
- Independent Study
- Motivation
- Supervision
- Team Teaching
- Corrections
- Cooperative Purchasing
- Media Services

TARGET AREAS

- Handicapped
- DDC/CCNS
- Early Childhood
- Human Services
- Career/Vocational/Technical
- Community Service Agencies

127 MANAGEMENT AND ADMINISTRATION
(see other side)

CURRENT PRIORITIES

LEGAL STRUCTURE AND GOVERNANCE

- Financing Collaboratives

STAFFING

- Staff Development
- Evaluation
- Flexibility
- Interdisciplinary Teams

PROGRAM AND SERVICES

- Program Evaluation
- Priority Determination
- Cost-effectiveness

ROLES

- As a change agent
- R & D Role

COMMUNICATIONS

- Other Intermediate agencies
- With MDE, IHE
- Other governmental agencies
- Social agencies (health, etc.)

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J. STEFANI / PROJECT SPOKE (NORTON)

SCHOOL MANAGEMENT CONCERNS

Needs Assessment

PERSONNEL/RESOURCES

Staff Development
Community Involvement
Teacher Center
Supervision

SUPPORT PROGRAMS/SERVICES

CURRICULUM AND INSTRUCTION

PBE
Alternative School
Occupational/Career Development

SPECIAL EDUCATION

Mainstreaming

STUDENT

Gifted
Student Rights

TECHNIQUES

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OTHER

Graduation Requirements
Declining Enrollment
Back to Basics

)0 130

APPENDIX E

How To Interpret An Abstract

INTERPRETING AN ABSTRACT

1.	AN	ERIC Accession number
	AU	Author/s
2.	IN	Author affiliation or name of institution where work done.
	TI	Title
3.	SO	Journal title, volume, issue numbers, etc.
4.	CH	Clearinghouse code
5.	PR	EDRS Price
6.	PT	Publication type code
7.	AV	Availability statement
	NT	Descriptive notes
	MJ	Major subject descriptors
	MN	Minor subject descriptors
	ID	Identifiers (words used to describe document)
	AB	Abstract or annotation

1. ERIC Accession Number — used to locate document in the files.
2. IN — Institution; sometimes it is inexpensive to order the document directly from the institution or author. OS stands for Organizational Source.
3. SO — EJ accession numbers are retrieved from the Journal cited under SO, or Source.
4. CH — Clearinghouse accession number; this can be cross-referenced by using *Resources in Education* to locate an ED or EJ number.
5. PR — Price; indicates availability from ERIC in microfiche or hard-copy unless the notation "Not Available EDRS" or EDNA appears.
6. PT — Tells if it is a curriculum guide, a research document, etc.
7. AV — Where to obtain the document.

APPENDIX F

FEEDBACK FORM

FEEDBACK QUESTIONNAIRE

1. Are the materials you received related to your request on the information profile?

2. Please indicate the information's general RELEVANCE to your information interest areas:

   ____High relevance (4) ____Marginal relevance (2)

   ____Moderate relevance (3) ____No significant relevance (1)

3. About what percentage of the citations/references are within the scope of your interest areas?

   _____percent within scope

4. About what percentage of the references are LIKELY TO BE USED for your work activities?

   _____percent likely to be used

5. Please list here any document numbers (ED numbers) that appear to be likely to be most useful to you:

6. List any additional topic areas that we should search for you:

Please return this form to:

Merrimack Education Center
101 Mill Road
Chelmsford, Mass. 01824

Search #_____

Name_____ District_____

APPENDIX G

Sample Newsletter

TEN YEARS OF SERVICE TO MASSACHUSETTS SCHOOLS

NEWSLETTER ITEMS

This Newsletter is provided by MEC on a quarterly basis for superintendents affiliated with the Merrimack Education Center. Additional copies of these report letters may be requested from the Center at any time. The brief reports in our Newsletter primarily serve two purposes:

1. *Keep schools abreast of local developments-- both present and proposed.*

2. *Alert school systems to outside developments that may subsequently impact on the area.*

This Newsletter Report is indexed so that items of interest can be referred to quickly. The convenient request form at the end is for readers to request further information on any of the brief news items reported.

WHERE TO FIND. . . .

Declining Test Scores.....1
Back to Basics.....2
Graduation Requirements.....2
Minimal Competency Testing..2
Directory of Special Education Resources.....3
Consumer Education.....3
Opinions about the Schools & Parent/Citizen Surveys...3
Consumer Information Center.3
Need for Consumer Education.3
Declining Enrollment.....4
Educational Assessment in Massachusetts.....4

DECLINING TEST SCORES have been publicized throughout the Nation for the past several years as a major educational issue. A review of the literature and a bibliography is available from the Information Services Section of MEC indicating what the literature reports.

The state-of-the-art review cites such issues as changes in the tests, changes in the population taking the tests, changes in the school environment, and social context as affecting the test scores and achievement patterns.

Failure of students to elect the more traditional academic course in high school is also cited as one reason for plummeting college entrance test scores. (Request summary of the Ford Foundation study "Achievement Test Score Decline," and the Resource Guide on Declining Test Scores.)

BACK TO THE BASICS continues to be the number one "Hot Topic." Usually led by parents, ministers, businessmen, and politicians, this issue is national in scope. According to Ben Brodinsky in the March issue of *Phi Delta Kappan*, back-to-basics advocates are demanding:

1. Emphasis on 3 R's and phonics.
2. English, science, math and history at the secondary level taught from "clean textbooks."
3. "No nonsense" and a dominant teacher role.
4. Drill, recitation, homework, and frequent testing.
5. A, B, C report cards or numerical values--100, 80, etc.
6. Strict discipline with corporal punishment; strict dress code.
7. Promotion only after mastery of skills.
8. Eliminate the frills.
9. Eliminate electives; increase number of required courses.
10. Ban innovations--new math, new science, etc.
11. Eliminate social services--related to frills.
12. Patriotism in the schools.

For a report of this article, check the appropriate box at the end of this Newsletter.

Increased emphasis on developing skills in the traditional study areas has been called for. For opinions on how the back-to-basics movement affects the social studies, request "LOOKING AT BACK TO BASICS." For a history of the back-to-basics movement, request ERIC ED 122 446.

GRADUATION REQUIREMENTS AND MINIMAL COMPETENCY. . .

The mood that inspired the "back-to-basics" movement; i.e., the allegations of inadequate acquisition of the basic skills among the Nation's school children, apparently underlies a related endeavor to ensure acceptable levels of accomplishment among high school graduates.

MINIMAL COMPETENCY TESTING. . .

Three states have introduced 1977 session bills on this topic to set performance standards for high school graduation or grade-to-grade promotion. Minnesota, Alabama, and North Dakota would prescribe high school diplomas to indicate completion of proficiency tests and performance indicators.

For information on the GRADUATION REQUIREMENTS, a comprehensive topic package is available for review with journal articles, abstracts, and bibliographies enclosed.

At the close of 1976, seven states (California, Colorado, Florida, Maryland, Virginia, New Jersey, and Washington) had enacted legislation and another nine states had taken either State Board or State Department of Education action to mandate some form of minimal competency activity.

GIFTED STUDENTS AND PROGRAMS FOR THE GIFTED have emerged as one of the most frequent information questions. We have prepared a topic package including such issues as "Testing the Gifted," providing programs for the gifted and talented, and other timely topics.

SERIES #2
DIRECTORY OF SPECIAL EDUCATION RESOURCES FOR TEACHER TRAINING

The second in a series, this booklet compiles over fifty items including resource materials for home/school communication, classroom techniques, testing and assessment, media and materials, and an ERIC bibliography. A new addition to this second in the series is the topic of severely/multiply handicapped. The booklet serves as a compact, annotated guide to hard-to-locate but valuable products designed to meet the needs of children with different learning styles through diverse programs and materials. The booklet provides a partial guide to agencies as well.

For those who have the first booklet in this series, you will want to read the all new resource listing.

CONSUMER EDUCATION. . .

In a time of rising prices and uncertain economic conditions, consumer education becomes vital to serving the best interests of the individual and the society. MEC is in the forefront in meeting the need for consumer education as the Center continues to develop a comprehensive approach to consumerism.

To date MEC has begun to develop a consumer resource center and has made contact with similar activities elsewhere. Work has also begun to process curriculum materials for public school use. A set of additional tasks will be undertaken which should result in MEC playing an increasingly important regional and State role in consumer education. A spring conference is planned for April 5th.

OPINIONS ABOUT THE SCHOOLS AND PARENT/CITIZEN SURVEYS are frequent topics about which we receive inquiries at the Information Desk. For a summary of a study conducted by Dr. Burton Goodrich, "OPINION ABOUT A SCHOOL SYSTEM," contact him at the Superintendent's Office in Lunenburg, MA.

Lloyd Blanchard has also attended a recent conference on surveying the public through questionnaires and surveys, and will be glad to point out any useful techniques he picked up at the conference.

For further information on surveys and questionnaires, request ERIC ED 084 291 at the end of the Newsletter. We will also send you a copy of Lloyd Blanchard's conference report.

CONSUMER INFORMATION CENTER. . .

A study team of representatives from four MEC communities is presently meeting weekly to plan the Consumer Education activities which will provide for program and curriculum development, staff development, and information resources in the Merrimack Valley. Three additional superintendents from MEC communities serve as a panel for evaluating the project.

Funded by a grant from the U. S. Office of Education, Consumer Education Project, this will be a major developmental effort of the Center.

NEED FOR CONSUMER EDUCATION. . .

The proposal to the U. S. Office of Education has documented the need for a consumer education resource center in the Merrimack Valley. For reprints of this report, mark the appropriate box at the end of the Newsletter.

DECLINING ENROLLMENT. . .

The number of children 14 years of age or younger has dropped by 5.5 million since 1970. Illustrating the population shift away from the north, the Census Bureau says the south and west had 8 million fewer people than the north in 1970. Now these two regions are slightly ahead of the north.

National Center of Educational Statistics projects a continuing decline in elementary students for the next five years with secondary population starting to decrease through 1980.

EDUCATIONAL ASSESSMENT IN MASSACHUSETTS. .

For more than three years the Massachusetts Educational Assessment Program has been measuring the knowledge and attitudes of 9 and 17-year-olds across a variety of learning areas. A current report is available on how Massachusetts students fare in ecology and consumer economics. The Massachusetts Department of Education makes available curriculum workshops and provides assessment teams to aid local schools in analyzing their testing results from the State assessment.

For a copy of this report on CONSUMERISM, return the request form to MEC.

RETURN THIS FORM TO: MS. HOLLY STENGEL, INFORMATION SPECIALIST
MERRIMACK EDUCATION CENTER
101 MILL ROAD
CHELMSFORD, MASSACHUSETTS 01824
(617) 256-3985

NAME_____

SCHOOL ADDRESS_____
School Name Street

TOWN_____ZIP_____

PHONE_____POSITION_____

If you want information on other MEC products and services indicate by checking below or call 256-3985.

_____I would like to be on the Center's permanent mailing list.

_____ERIC ED 084 291--survey/questionnaire information
_____Educational Assessment in Massachusetts: CONSUMERISM
_____Massachusetts Association of School Superintendent's--Conference Notes
_____Lloyd Blanchard's Report on the Annual School Boards' Conference
_____Summary of Back to Basics--literature search
_____Summary of "High School Graduation Requirements"--literature search
_____Need for Consumer Education in Massachusetts
_____Declining Test Scores Resource Guide (free to MEC Members)
_____Looking at "Back to Basics"--ERIC ED 122 446
_____Reprint of March *Phi Delta Kappan* article on Back to Basics
_____Information package on the BASICS ($15.00)
_____Information package on the GIFTED ($15.00)
_____Information package on MINIMUM COMPETENCIES/GRADUATION REQUIREMENTS ($15.00)

APPENDIX H

FINAL QUESTIONNAIRE

EVALUATION FORM

1. How often does someone communicate with you from the Center or do you receive communications from the Center? (pertaining to information, staff development, special education, etc.)

Never____ About Once A Year ____ About Monthly____

About Twice A Year____ More Frequently Than Monthly____

Weekly____

2. How often during a school year do you receive information or technical assistance from the Center?

In the form of:	About Monthly	About Weekly
(a) media/materials	M	W
(b) correspondence	M	W
(c) in-person question answering	M	W
(d) telephone question answering	M	W
(e) workshops, courses, seminars	M	W
(f) group consultation	M	W
(g) other services	M	W

3. What is your overall opinion thus far of the MEC program that provides regularly mailed information?

____excellent (6) ____very good (4) ____adequate(2)
____good (5) ____fair (3) ____inadequate (1)

4. Does the MEC information service help you to keep informed in your professional areas of responsibility?

To A Great Degree 6 5 4 3 2 1 0 Minimal Degree

5. If so, has the information or knowledge contributed to your work effort?

To A Great Degree 6 5 4 3 2 1 0 Minimal Degree

KEY = 3- Frequently 2-Occasionally 1- Rarely

6. Please indicate which of the following linkage OUTCOMES you believe have been derived from the SDI information provided you over the past year.

Increased my general knowledge of the field of education	3 2 1
Gave me new concepts for approaching my work	3 2 1
Helped me solve a problem related to work	3 2 1
Provided or led me to, new materials for work	3 2 1
Increased my awareness of new educational practices	3 2 1
Helped me identify new sources of assistance for improving my work-related activities	3 2 1
Made me more satisfied with something I was already doing	3 2 1
Made me more critical with something that I had been doing	3 2 1
Gave me a favorable attitude toward something I might do differently	3 2 1
Caused me to reject implementing a specific innovation	3 2 1
Helped me make a decision concerning a new educational program or practice	3 2 1
Encouraged me to try a new educational practice	3 2 1
Led me to adopt a new educational practice on a more or less permanent basis	3 2 1
Provided assurance that I was on the right track in something I had developed	3 2 1
Enabled me to provide information or advice to others	3 2 1

7. We would like to find out what you consider to be the main advantages and disadvantages of the information service. For this purpose we have listed below some of the possibilities. You may choose none, one, or several in each list.

ADVANTAGES

____ the service provides references I might otherwise not locate
____ the service is time-saving; i.e., it reduces the time spent
____ searching the literature by other methods
____ the service is convenient; i.e., it obviates the need for
____ copying out references from journals or indexes by hand
____ the service speeds up accumulation of information
____ other _____

DISADVANTAGES

____ the computer printout is unattractive
____ there is not enough information on the printout
____ other _____

_____

8. Since you started receiving printouts and regularly mailed information/documents, has there been an increase in your use of ERIC or journal articles?

Increase by _____% (by what percent) Decrease by _____% (by what percent)

No change____

9. After selecting relevant references and citations from a computer printout do you subsequently look up the articles?

(5) Always ____ (4) Often_____ (3) Frequently____ (2) Occasionally_____ (1) Rarely____

10. What did you do with the information once it was located?

____wrote a report
____incorporated into a larger communication
____prepared a speech or presentation
____passed it along to others
____prepared an agenda
____prepared a briefing (school board)
____ other_____ _____

10.B. Did others make use of any of the information you obtained?

10.C. If so, how many?_____(approximate number)

11. Do you consider that you have reduced time spent:

a. Scanning current journals by: 5%____ 10% 15%____ 25%____ 30%____

b. Scanning indexes or table of contents by: 5%____ 10%____ 15%____ 25%____ 30%____

12. If there were a permanent current awareness (mailed) service would you wish to become a subscriber?

Yes _____ No_____ Uncertain_____

13. Would you recommend any of your staff members be put on the mailing list?

_____
Name

_____
Name

_____
Name

14. Have you used any information provided for PROGRAM PLANNING, CURRICULUM DEVELOPMENT, MANAGEMENT TASKS, etc.?

____appraising teacher or administrator effectiveness
____Providing in-service training
____Providing pupil personnel services
____Personnel matters
____Consulting or advising other educators
____Determining educational needs
____Establishing goals and objectives
____Evaluating program outcomes
____Program planning
____Management concerns
____Policy formation
____Practice improvement
____Teaching or instruction
____Solving a problem

____Identifying Alternative Approaches to Problem Solving
____Identifying New Educational Programs, Methods, Materials or products

Other _____

_____

15. Please describe BRIEFLY any specific instances where you have applied this information.

16.

DEFINE A SCALE SUCH THAT THE LOWER ENDPOINT IS THE VALUE TO YOU OF YOUR INDIVIDUAL ACTIVITIES TO KEEP CURRENT IN YOUR FIELD. LET THE SCALE BE IN TERMS OF PERCENT IMPROVEMENT OVER THIS VALUE.

EXAMPLE

Value of your present activities 0 10% 25% 50% 70% 100% 150% 200% Improvement

Using the scale described above please rate the incremental value to you of a monthly mailed SDI announcement service to help keep you informed of current documents.

The MEC current awareness information (mailed) service

Value of Your Present Activities 0 10% 25% 50% 70% 100% 150% 200%

A research assistant who spends one half day per month gathering reading materials for you at MEC.

Value of Your Present A Activities 0 10% 25% 50% 70% 100% 150% 200%

A monthly mailed SDI announcement service announcing current documents at $85.00/year. (An annual expenditure of $ 85.00 per year for a current awareness service)

VALUE OF YOUR PRESENT ACTIVITIES 0 10% 25% 50% 70% 100% 150% 200%

Value of computerized services for information retrieval.

VALUE OF YOUR PRESENT ACTIVITIES 0 10% 25% 50% 70% 100% 150% 200%

IMPROVEMENT

The time the computer saves you searching the indexes by hand.

Value of
our Individual
ctivities

0%	10%	25%	50%	75%	100%	150%	200%	IMPROVEMENT

The Search Service increased my current awareness of information sources on high interest topics by :

lue without
rch service

0%	10%	25%	50%	75%	100%	150%	200%	IMPROVEMENT

The search service increased my use of ERIC and journal literature on the topics I chose:

lue without
rch service

0	10%	25%	50%	75%	100%	150%	200%	Improvement